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Ministry of Forests

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Report of the Ministry of Forests

Fiscal Year Ended March 31, 1985

Province of British Columbia
Ministry of Forests

Honourable T. M. Waterland, Minister

October 1, 1985

The Honourable Robert G. Rogers,
Lieutenant-Governor of British Columbia

May It Please Your Honour:

Herewith I respectfully submit the Annual Report of the Ministry of Forests for the year ended March 31, 1985.

Yours truly,

T.M. Waterland,
Minister

September 30, 1985

The Honourable T.M. Waterland,
Minister of Forests,
Parliament Buildings,
Victoria, B.C.

Sir:

I have the honour to submit the Annual Report of the Ministry of Forests for the year ended March 31, 1985.

Yours truly,

A.C. MacPherson
Deputy Minister

The Ministry of Forests of the Province of British Columbia

The Ministry of Forests is responsible for managing the forest and range resources of the Province of British Columbia.

The purposes and functions of the ministry are specified in Section 4 of the *Ministry of Forests Act*. They are to:

"(a) encourage maximum productivity of the forest and range resources in the Province;

(b) manage, protect and conserve the forest and range resources of the Crown, having regard to the immediate and long term economic and social benefits they may confer on the Province;

(c) plan the use of the forest and range resources of the Crown, so that the production of timber and forage, the harvesting of timber, the grazing of livestock and the realization of fisheries, wildlife, water, outdoor recreation and other natural resource values are coordinated and integrated, in consultation and cooperation with other ministries and agencies of the Crown and with the private sector;

(d) encourage a vigorous, efficient and world competitive timber processing industry in the Province; and

(e) assert the financial interest of the Crown in its forest and range resources in a systematic and equitable manner."

The responsibilities and authorities of the ministry are defined in the following provincial legislation:

— *Ministry of Forests Act*, Revised Statutes, 1979, Chapter 272.
— *Forest Act*, Revised Statutes, 1979, Chapter 140.
— *Range Act*, Revised Statutes, 1979, Chapter 355.
— *Boom Chain Brand Act*, Revised Statutes, 1979, Chapter 33.

Twenty-two regulations further specify the authority of the ministry. Numerous other acts, administered by other provincial and federal agencies, also affect the use of forest and range resources. The ministry works cooperatively with these other agencies, as specified in various agreements and policies.

In addition to outlining the purposes and functions of the ministry, the *Ministry of Forests Act* requires that three important reports be prepared and considered by the government:

1) A forest and range resource analysis is required periodically, to describe in detail the resource's condition, management and future uses. This enables the government to set overall priorities and long term objectives.

2) A five year forest and range resource program is required annually, to set schedules, methods and priorities for resource management and improvement. This presents the government's resource management intentions.

3) An annual report is required, to review the use and management of the resource and the effects of the ministry's programs. It monitors the performance of the ministry with respect to the five year program.

The ministry is structured to decentralize authority to six forest regions and forty-six forest districts, as described in Section V of this annual report.

The ministry's many activities, from growing timber and administering the timber harvest to providing recreation sites and fighting forest fires, are organized into nine programs, which form the basis of organization of this annual report.

Contents

Page

I. Deputy Minister's Message 7

II. Program Reports 9
Management 9
Finance and Administration 10
Harvesting 11
Silviculture 13
Research 16
Forest Protection 17
Fire Suppression 19
Range Management 20
Recreation Management 22

III. Summary Statistical Tables 23
Table 1: Forecast and Actual Expenditure in 1984-85, by Program 23
Table 2: Forecast and Actual Expenditure in 1984-85, by Forest Region 24
Table 3: Composition of Actual Expenditure in 1984-85, by Program 24
Table 4: Composition of Actual Expenditure in 1984-85, by Forest Region 25
Table 5: Forest and Range Revenue in 1984-85, by Forest Region 25
Table 6: Forest Land in British Columbia, by Forest Region 26
Table 7: Deletion of Land from Provincial Forests in 1984-85, by Forest Region 26

IV. Detailed Statistical Tables 27
Finance and Administration 27
Harvesting 29
Silviculture 38
Forest Protection and Fire Suppression 45
Range Management 48
Recreation Management 51

V. The Structure of the Ministry 53
Headquarters Organization 54
Forest Region Organization 56

VI. Directory 58

I. Deputy Minister's Message

This report reviews the accomplishments and expenditures of the Ministry of Forests in the fiscal year ended March 31, 1985. Performance is assessed by comparing accomplishments and expenditures with goals and forecast spending estimates set forth for the year in the *Five-Year Forest and Range Resource Program, 1984-89*, which was submitted to the Legislative Assembly in February, 1984.

The year 1984-85 brought mixed results. While significant progress was made in improving the management of the province's forest resources, market conditions and the competitiveness of the coastal part of the forest industry continued to be of concern.

Market Conditions

The British Columbia forest industry is often characterized as cyclical, experiencing alternating cycles of good sales with high prices, and poor sales with low prices. Several such cycles have occurred in the last two decades which, coupled with forecasts of favourable housing demand in the United States based on demographic trends, led to the expectation of a strong recovery from the recent recession.

The expected recovery did not materialize. An oversupply of products resulted in intense competition and unsatisfactory prices. Prices for the most important forest products produced in British Columbia — lumber, pulp and newsprint — showed some strength early in 1984. Subsequently, prices declined for key lumber and pulp products.

Firms in the forest industry responded to these conditions by reducing costs and streamlining operations. Financial results for the industry were mixed, with some firms showing improvements over the past two years.

Complaints arose about the share of the United States lumber market supplied by Canadian firms, along with allegations of subsidies from government. The ministry assisted in diplomatic discussions regarding these matters.

Ministry Expenditure, Revenue and Accomplishments

The forecast expenditure for the year was $316.8 million, but during the year the government provided additional budgetary allocations as it became clear that more funds would be required to achieve the goals set for the year. These extra allocations resulted in a revised forecast expenditure of $344.6 million.

As shown in Tables 1 and 2, total expenditure by the ministry was $325.8 million, 19% higher than in the previous year. More than one third of the increase resulted from the transfer of responsibility for paying employee benefits from the Ministry of Provincial Secretary and Government Services to the Ministry of Forests. The remainder, an increase of about 12%, was due to more work in core programs.

The most significant increases in expenditure were in the Silviculture, Forest Protection and Fire Suppression Programs. In particular, the Silviculture Program expenditure, at $110.7 million, was $22.7 million more than in the previous year, due to increases in planting, site preparation and related work.

Tables 3 and 4 show the composition of expenditure by the ministry in 1984-85. Wages and salaries, net of employee benefits (as reported in previous years) were down 5% from the previous year. Even including employee benefits, wages and salaries accounted for only 39% of total expenditure, compared with 42% in the previous year. Implementation of ministry programs through the private sector increased significantly. Contract work and work by licensees accounted for 41% of total expenditure, compared with only 36% in the previous year. The remaining 20% of total expenditure were for materials, supplies and other operational expenses.

Credit against stumpage payable is given, under Section 88 of the *Forest Act*, to licensees who undertake approved activities, such as road construction and reforestation, on Crown land.

Total expenditure by the ministry, by source of funds, is shown below:

Ministry of Forests budget	$260.3 million
Credits against stumpage revenue	$ 65.5 million
TOTAL	$325.8 million

Revenue collected by the ministry is shown in Table 5. Forest revenue, before the application of the credits noted above, was $187.3 million; range revenue was $1.2 million. In total, forest and range

revenue amounted to $188.5 million in 1984-85, down slightly from the previous year.

The condition of forest land in British Columbia is summarized in Table 6. The area of land deleted from provincial forests during 1984-85 is shown in Table 7. Deletions for agricultural use and for settlement increased.

The timber harvest during the year was 74.5 million cubic metres (m^3), down by 3.2 million m^3 from 1983-84. Approximately 6.1 million m^3 were sold under the Small Business Enterprise Program in 1984-85. During the year, the government made an extra allocation of $6.5 million toward administration and road construction for future sales under the Small Business Enterprise Program.

New records were again set in tree planting. In 1984-85, a total of 121.7 million seedlings were planted on over 105 000 hectares (ha). This represents a significant achievement. Planting will expand still further in the years ahead.

Bark beetle infestations in the interior of the province continued to expand, particularly in the Cariboo and Prince George Forest Regions. Accordingly, efforts in detection, control and salvage were accelerated.

The ministry's accomplishments during 1984-85 were many and were generally achieved efficiently and smoothly. In the *1984 Annual Report of the Ombudsman*, Ombudsman K.A. Friedmann repeated his earlier observation that the volume of complaints about the ministry remained relatively low, "considering the importance of the forest resource to the province's economy, and the number of people affected by Ministry decisions."

As required by Sections 7 and 8 of the *Ministry of Forests Act*, the ministry submitted the *1984 Forest and Range Resource Analysis* and the recommended forest and range resource program to the government on September 28, 1984. Meetings and briefings were held to examine these important documents. Then, on March 19, 1985, the minister tabled the resource analysis and the approved *Five-Year Forest and Range Resource Program, 1985-1990*, in the legislative assembly and released them for publication.

The resource analysis presents a comprehensive look at the state of the province's forest and range resources. It is the most current source of detailed information available. The five-year program is the government's plan for managing these resources. Of particular note is that planting will be increased substantially in the next few years, reaching 200 million seedlings per year.

The resource analysis and five-year program were major projects which required extensive efforts by ministry staff, industrial foresters and consultants. Implementing the recommendations and plans in these documents is a task that now lies ahead.

A.C. MacPherson
Deputy Minister

II. Program Reports

Management Program

The Management Program provides executive direction, control and information services for the ministry. The program includes the executive, Information Services Branch and Strategic Studies Branch in Victoria; regional managers and regional staff managers in the regional offices; and district managers, operations superintendents and support services supervisors in the district offices.

Forecast expenditure for 1984-85 was $12.1 million; actual expenditure was $11.9 million. Net of employee benefits of $1.6 million, previously paid by the Ministry of Provincial Secretary and Government Services, actual expenditure in the Management Program was $0.4 million less than in the previous year.

During 1984-85, continued efforts brought further adjustment of the ministry's organization and staffing. At the executive level, the former Timber, Range and Recreation Division was eliminated and responsibility for its branches was divided among the three remaining assistant deputy ministers and the deputy minister. Information officers in the regional offices were also eliminated. Section V of this report provides details of the new structure of the ministry.

Completion of the *1984 Forest and Range Resource Analysis* was a major accomplishment for the ministry. Special reports and other contributions, from staff throughout the ministry and consultants under contract, were compiled and summarized by staff under the Management Program. The 400 page document was prepared and submitted to the Lieutenant Governor in Council on September 28, 1984, in accordance with Section 7 of the *Ministry of Forests Act*. Copies of the analysis are available from the Queen's Printer.

In accordance with Sections 8 and 10 of the *Ministry of Forests Act*, the staff of the Management Program also prepared the *Five-Year Forest and Range Resource Program, 1985-1990*, and the *Annual Report, 1983-84*. Copies of these documents are also available from the Queen's Printer.

Extensive negotiations during 1984-85 resulted in the signing of the Canada - British Columbia Forest Resource Development Agreement, 1985-1990, on May 25, 1985. This agreement launched an aggressive expansion of efforts to restock forest land and to improve many other aspects of forest management in the province.

A major exchange of timber harvesting rights was completed under Section 51 of the *Forest Act* in 1984-85. Timber licences for about 7.4 million m^3 of timber, held by Crown Forest Industries Limited, were exchanged for 7.4 million m^3 of unencumbered Crown timber closer to the licensee's other operations. Resource management and development will be improved by this exchange. Analyses and negotiations for future exchanges involving approximately 12.0 million m^3 of timber progressed during the year.

Finance & Administration Program

The objective of the Finance and Administration Program is to provide the ministry with efficient financial control and administrative support. This includes financial management, computer systems, personnel services, staff safety and various para-legal, technical and equipment services. During 1984-85, buildings, grounds and offices for the entire ministry were provided by the Finance and Administration Program.

Forecast expenditure for 1984-85 for the Finance and Administration Program was $53.7 million; actual expenditure for the year was $53.3 million (*see* Table A-1). Net of employee benefits, previously paid by the Ministry of Provincial Secretary and Government Services, actual expenditure was $4.2 million less than in the previous year. This reduction was realized primarily in lower payments to the British Columbia Buildings Corporation for buildings, grounds and offices throughout the province, which were reduced by $5.6 million to $15.9 million through substantial office space reductions during 1983-84 and 1984-85.

The *Five-Year Business Plan (1982-1987)* for the Finance and Administration Program sets goals for meeting the ministry's financial and administrative needs more efficiently, and emphasizes the links among the ministry's objectives, human and financial resources, and outputs. During the year, work proceeded on updating the plan to cover the period from 1985 to 1990.

The accomplishments of the Finance and Administration Program during 1984-85 included the following:

- The ministry's Financial Management Information System was implemented and extended to include reports on revenues, credits under Section 88 and timber supply areas.
- A comprehensive review of the Billing and Harvest Data Base System was undertaken, with the goals of simplification and improved system controls.
- Development, for government consideration, of a simplified appraisal system was accelerated.
- Reviews, aimed at simplification of procedures, led to proposals for improved revenue administration and to a simplified Signing Authority Matrix which is presently being tested in regional locations.
- Manuals on inter-ministry agreements were compiled and issued throughout the ministry.
- A Forestry Asset Management System received Treasury Board approval. The first phase is being implemented.
- A major distribution/warehousing study was completed. It will lead to the consolidation of provincial warehousing, with estimated annual savings of over $1.0 million.
- Consolidation of accommodation continued, with floor space reductions of approximately 12 600 m^2 in field offices, residences and mobile homes, and 5 600 m^2 in the regional and Victoria offices.
- Nineteen marine vessels were disposed of by sealed tender and 24 were disposed of by public auction.
- Women's Programs activities continued throughout the ministry.
- Lower accident frequencies were achieved by the ministry.

The staff under the Finance and Administration Program also helped to plan and implement further reductions in the level of ministry employment. Due to accelerated efforts, total employment over the year was 8% lower than anticipated (*see* Tables A-2 and A-3).

Harvesting Program

The objective of the Harvesting Program is to make timber available to the forest industry in a manner consistent with the province's objectives for the use of forest resources, including the generation of revenue. The program provides an inventory of harvestable timber, planning of harvest levels, access to timber by engineering and building roads, management of timber tenures and cutting permits, scaling and valuation for billing of harvested timber, and research related to harvesting.

Forecast expenditure for 1984-85 was $67.5 million, which was increased during the year to $73.3 million, primarily by an allocation of $6.5 million for the Small Business Enterprise Program. Actual expenditure was $73.8 million (*see* Table B-1). Net of employee benefits, previously paid by the Ministry of Provincial Secretary and Government Services, actual expenditure was $0.7 million greater than in the previous year.

The level of expenditure reflects the continuation of a sharp curtailment, begun in 1981-82, of road construction to develop new areas. Section 88 road credits against stumpage increased to only $15.3 million from $13.7 million in the previous year. This contrasts with credits of $51.0 million in 1980-81. By concentrating harvest activity in previously developed areas, forest product companies were able to minimize delivered wood costs and avoid the cost of interim financing for major road projects.

Market demand for forest products continued to be strong, but the prices were variable and unsatisfactory.

Lumber production in 1984 rose slightly from the previous year's record to 13.1 billion board feet. This was largely due to the combination of a slightly stronger housing market in the United States, with 1.8 million housing starts, and a favourable exchange rate. Prices for spruce-pine-fir 2×4's, a key product for firms in the province's interior, rose to $190 U.S. per thousand board feet (MBF) early in 1984, but fell quickly to about $140/MBF by autumn. They rose moderately toward the end of the fiscal year 1984-85, stabilizing at roughly $160/MBF in the spring of 1985. The low prices appeared to be the result of an oversupply of lumber and weak overseas demand, continuing the situation begun in 1983.

Pulp production in British Columbia was down 7% in 1984 to 5.2 million tonnes. Oversupply on the world market caused prices to fall precipitously from $540 U.S. per tonne in mid 1984 to about $400/tonne in early 1985. Newsprint production dropped 4% from the near peak level reached in 1983, and newsprint prices rose during 1984 and then remained stable at $461 U.S. per ton.

Plywood production in 1984-85 was 12% lower than in the previous year, reflecting increasing availability of cheaper substitutes.

Forest revenue from the Harvesting Program, based on gross stumpage and miscellaneous sources, decreased 5% in 1984-85 to $187.3 million. This level of revenue is about one-third that of the last cyclical peak in 1979-80.

The main cause of the relatively low forest revenue was the continued low level of appraised stumpage. Minimum stumpage, set at a fixed percentage of prices for logs, lumber and chips, remained in effect for most species throughout 1984-85 (*see* Table B-3). Coastal western red cedar was the only major species for which stumpage rates increased significantly, in response to market forces, and exceeded minimum stumpage prices. The provincial average stumpage price for all species stayed near $2/m^3 for the fourth year in a row. By contrast, this provincial average was above $7/m^3 during the cyclical peak in 1979 and remained at $5/m^3 in 1980-81.

The volume of timber harvested in 1984-85 decreased 4% from the previous year's record to 74.5 million m^3. This was only 2% lower than the volume harvested during the cyclical peak in 1979. Details of the timber harvest, by land status and by species, are shown in Tables B-5 and B-6.

The area harvested in 1984-85 is shown in Table B-7, by forest region, harvest method and land status. While the provincial total area harvested increased 4%, the area harvested within tree farm licences increased 19% over the previous year.

Log exports, shown in Table B-8, reached 3.4 million m^3 in 1984-85, a new record. The volume exported has more than doubled in just two years, and now represents almost 5% of the total timber volume harvested. During the year, the minister announced a new policy which will permit log exports only under very limited, specific conditions, including approval from a committee divorced from the logging industry.

Activity under the Small Business Enterprise Program in 1984-85 is shown in Tables B-4 and B-9. The volume harvested and billed under this program increased by 18% to 4.6 million m^3, which was 6% of the provincial total. The volume sold was again higher than the annual volume apportioned to the program (*see* Table B-11), but the volume harvested was still 6% below the apportioned volume. During the year, $6.5 million were allocated to the program, and legislation was introduced which will ensure continuity of funding for forest management on land affected by the program.

The number of licences administered during the year and the timber volumes committed to those licences are shown in Tables B-10 and B-11. The *Forest Act* authorizes ten forms of rights to Crown timber, ranging from long term supplies for pulp mills to firewood and Christmas trees for individuals. Tree farm licences provide an allowable annual cut (AAC) from a specific area, consisting of Crown land and, in many cases, private land. They are for a term of 25 years, and can be replaced if responsible forest management is maintained by the licence holder. Woodlot licences are similar but smaller, and intended for management of private land along with Crown land. Three types of licences with shorter terms provide an AAC from Crown land: timber sale harvesting licences, which are being phased out, forest licences and timber sale licences (major). A variety of other licences, such as timber sale licences (minor), free use permits and licences to cut, provide rights to harvest timber from specific areas within short time periods.

During 1984-85, a forest licence in the Nelson Forest Region was surrendered to the Crown, and a decision was made to reduce the area of Tree Farm Licence No. 1 in the Prince Rupert Forest Region by about one third. In both cases, the minister invited proposals for new forest licences to use the timber that became available.

In January, 1985, Scott Paper Limited's Tree Farm Licence No. 43 came into effect, following approval of a management and working plan by the chief forester. This is the first tree farm licence awarded for management of deciduous trees.

Also in January, cabinet approved, on the minister's recommendation, the application by Canfor Limited for a tree farm licence in the Chetwynd area. The new tree farm licence will replace other licences held by the company in that area, once approval for a management and working plan is granted by the chief forester.

Earlier in the fiscal year, the minister invited proposals for economical utilization of aspen and other wood fibre in northeastern British Columbia, and of pulpwood and other wood fibre in southeastern British Columbia. Studies had indicated that sufficient fibre was available in both parts of the province for new or expanded pulp manufacturing facilities.

Table B-12, which summarizes the roads for which the ministry is responsible, is expanded in this report to include all types of roads. Construction of about 500 kilometres (km) of roads in Classes 4, 5 and 6, brought the inventory of roads to almost 27 000 km. This represents a major public asset, controlled by the ministry, which provides access to the province's forest and range land for industry, fire fighting and recreation.

Changes in the inventory of bridges administered by the ministry are shown in Table B-13. These bridges are an integral part of the ministry's network of roads.

Silviculture Program

The objectives of the Silviculture Program are to restock denuded land and to improve the value and productivity of forest stands through silvicultural treatments. Denuded land is restocked through natural seeding and planting. Site preparation is used to promote natural restocking and to facilitate planting. Brushing and weeding are carried out on some plantations to ensure unimpeded growth of seedlings. Spacing, fertilization and conifer release are among the treatments applied to forest stands to improve their value and productivity.

Forecast expenditure for 1984-85 was $105.2 million, which was increased to $120.6 million, primarily by an allocation of $15.1 million in Section 88 funds in October, 1984. Due to the winter season, expenditure under this late allocation was limited to $4.8 million. Actual expenditure was $110.7 million (*see* Table C-1). Net of employee benefits, previously paid by the Ministry of Provincial Secretary and Government Services, actual expenditure was $19.2 million greater than in the previous year. This reflected the increasing recognition of the importance of reforestation, which is carried out under the Silviculture Program.

A record 121.7 million seedlings were planted in British Columbia during 1984-85. Of these, 116.0 million trees were planted on 100 035 ha of Crown land, and 5.8 million seedlings were planted on 5 507 ha of private land. Approximately 84% of the planting on Crown land was on land recently denuded (basic silviculture); the remaining 16% was on the backlog of Crown land which has been denuded and untreated for more than a few years (intensive silviculture).

The Canada - British Columbia Subsidiary Agreement on Intensive Forest Management was extended for fiscal year 1984-85. Under the terms of the extension, the federal government contributed $5.5 million toward enhancement of the forest resource base of the province. This program involved the implementation of intensive forest management, particularly for backlog reforestation, site rehabilitation and juvenile spacing. Silvicultural treatments funded by this agreement are included in this report.

The Canada Works, Ministry of Attorney General, and Environment 2000 programs funded additional silvicultural work which is not included in this report.

The Silviculture Program consists of four components:

Basic Silviculture

For Crown forest land, the goals and accomplishments in basic silviculture for 1984-85 were:

Activity	Goals[1]	Accomplishments
	(hectares)	
Surveys[2]	N/A[3]	209 983
Site Preparation	88 100	91 027
Planting	86 400	84 387
Brushing and Weeding	13 900	16 510

[1] *Five-Year Forest and Range Resource Program, 1983-1988.*

[2] Includes surveys of natural restocking and planting on recently denuded Crown land.

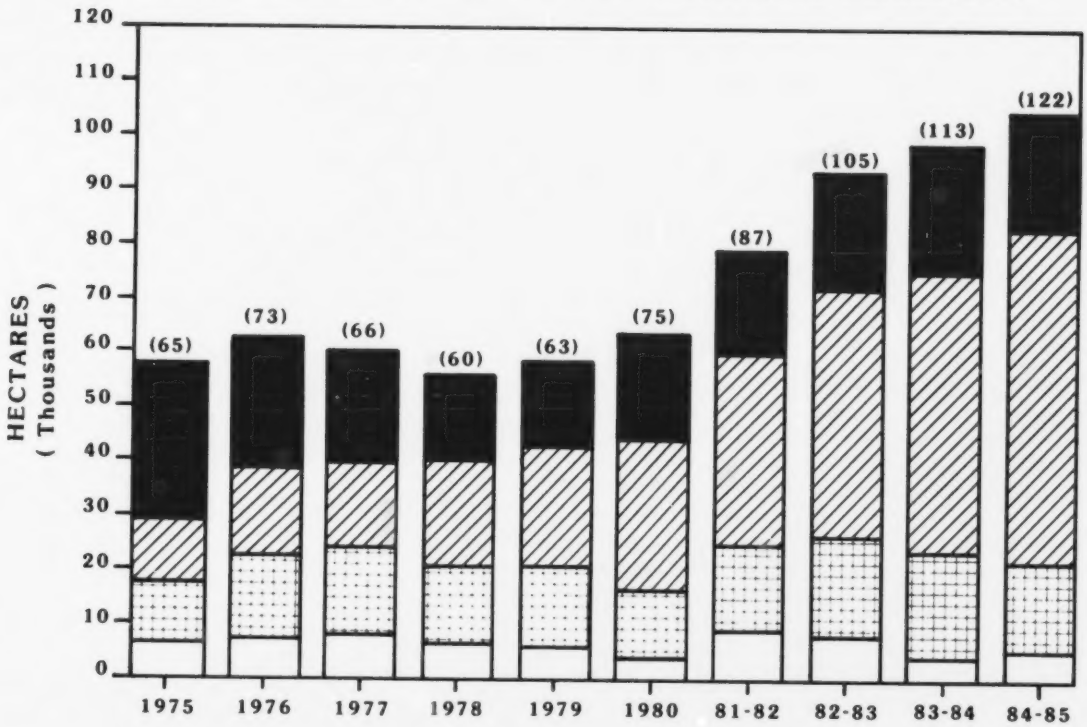
[3] Not available. No goal for surveys was published in the five-year program.

During 1984-85, the ministry and licensees surveyed 209 983 ha of recently denuded Crown land (*see* Table C-2). Half of the area surveyed was in plantations. The results of these surveys will be used to plan future treatments which will ensure restocking within specific time limits.

Recently denuded areas are inspected to determine if site preparation is necessary to obtain natural restocking or to prepare land for planting. Site preparation to promote natural restocking was performed on 17 604 ha (*see* Table C-3). An additional 36 184 ha were assessed and found not to require treatment to ensure natural restocking. Site preparation for planting increased to a record 73 423 ha in 1984-85 (*see* Table C-4). An additional 22 118 ha were deemed not to require any treatment prior to planting.

In 1984-85, 97.0 million trees were planted on 84 387 ha of recently denuded Crown land (*see* Table C-5). This accomplishment was greater than in all previous years but fell slightly short of the goal. An additional 5.8 million trees were planted on 5 499 ha

Area Planted on Crown and Private Land, With Millions of Trees Planted Shown in Parentheses



CROWN LAND (Planting funded by the ministry):

Ministry Planting

Licensee Planting (licences other than tree farm licences)

Licensee Planting (tree farm licences)

PRIVATE LAND :

Includes private land in tree farm licences and certified tree farms.

of recently denuded private land. The species of trees planted on Crown land, including recently denuded areas and backlog areas, are shown in Table C-6.

As shown in the graph on the facing page, planting on Crown land increased significantly in the past decade. The ministry funded planting on virtually all Crown land, but licensees carried the responsibility for planting on an increasing proportion of the area planted. More than 60% of the 1.2 million ha of Crown and private land planted since 1930 were planted in this past decade. Similarly, more than 60% of the 1,353.8 million trees planted on Crown and private land since 1930 were planted in this past decade. Tables C-7 and C-8 provide details of the area and number of trees planted during 1984-85, by land status and responsibility for planting. The graph and Tables C-7 and C-8 include recently denuded areas and backlog areas.

Brushing and weeding treatments to control undesirable vegetation in young stands expanded more than twofold to 16 510 ha in 1984-85 (*see* Table C-9). Brushing and weeding treatments were concentrated in the Vancouver Forest Region, where brush encroachment on very productive sites is a serious problem. Treatments included the judicious use of herbicides, which is a viable method of brush control.

Average costs of basic silviculture treatments are detailed in Table C-11.

Intensive Silviculture

For Crown forest land, the goals and accomplishments in intensive silviculture for 1984-85 were:

Activity	Goals[1]	Accomplishments
	(hectares)	
Surveys[2]	N/A[3]	155 694
Backlog Planting	15 700	15 647
Spacing[4]	3 600	5 615
Fertilization	—	—
Site Rehabilitation	600	14 493
Conifer Release	400	181
Thinning	—	86

[1] *Five-Year Forest and Range Resource Program, 1983-1988.*

[2] Includes surveys of natural restocking and planting on Crown land denuded for more than a few years.

[3] Not available. No goal for surveys was published in the five-year program.

[4] Includes juvenile and sanitation spacing.

During 1984-85, the ministry surveyed 155 694 ha of the backlog of Crown land which was denuded and left untreated for more than a few years (*see* Table C-2). About 10% of the area surveyed was in plantations. The results of these surveys will be used to plan where treatments are necessary to ensure restocking.

Restocking of the backlog of forest land that has been denuded for several years is one of the ministry's important activities which is funded in part by the federal government. In 1984-85, 18.9 million trees were planted on 15 647 ha of backlog Crown land (*see* Table C-5). An additional 5,000 trees were planted on 8 ha of backlog private land.

A total of 24 981 ha of Crown land was treated in 1984-85 to improve the value and productivity of forest stands (*see* Table C-10). Spacing of immature stands removes excess trees which compete for nutrients and light, allowing growth to be concentrated on the remaining crop trees. Spacing was accomplished on 5 615 ha. No fertilization took place in 1984-85, as priorities required available funds to be spent on basic silviculture. Site rehabilitation was carried out on a record 14 493 ha. The Prince George Forest Region treated 8 601 ha or 59% of the total area rehabilitated. Conifer release and thinning treatments were carried out primarily in the Vancouver Forest Region.

Average costs of intensive silviculture treatments are provided in Table C-11.

Nursery Operations

In preparation for future planting requirements, the ministry's nurseries sowed for 97.0 million seedlings during 1984-85. Private nurseries sowed for an additional 58.7 million seedlings.

Some sites require larger planting stock which can compete successfully with other vegetation. To improve cost-effectiveness, a large 2 + 0 container seedling program was initiated. Seedlings of this type are intended to replace more costly transplanted seedlings on brushy sites. The ministry transplanted 11.3 million seedlings and sowed for 10.8 million 2 + 0 container seedlings in 1984-85. Private nurseries transplanted an additional 5.6 million seedlings and sowed for an additional 12.9 million 2 + 0 container seedlings.

Seed Operations

A light cone crop occurred in 1984-85 in both natural stands and seed orchards, from which only 1 328 kilograms (kg) of seed were added to the

provincial seed inventory (*see* Table C-12). After withdrawal of 2 855 kg, the final seed inventory for all native species was 42 632 kg.

Two new seed orchards were established during the year, and minor revisions were made to existing orchards, bringing the total number of orchards at March 31, 1985, to 39, covering 114 ha. The ministry cooperatively funds 31 of these orchards, on 96 ha; of these, 15 are funded by credits under Section 88 and cover 36 ha. The remaining eight orchards, on 18 ha, are privately funded. Coastal and Interior Tree Improvement Councils, consisting of representatives from forest industry firms and the ministry, were active in advising the chief forester on the cooperative tree improvement and seed orchard program.

Research Program

The objectives of the Research Program are to stay abreast of technological developments, find solutions to problems and assist in incorporating improved management techniques into operational practice.

Forecast expenditure for 1984-85 was $7.8 million, which was increased during the year to $9.2 million with adjustments among programs. Actual expenditure was $9.0 million. Net of employee benefits of $0.8 million, previously paid by the Ministry of Provincial Secretary and Government Services, actual expenditure in the Research Program was $0.3 million less than in the previous year. This excludes expenditures devoted to research which have been allocated directly to other programs.

The Research Program consists of five components:

Silviculture

Research focussed on growth and yield in managed stands, forest vegetation management and white spruce reforestation. No new growth and yield installations were established; efforts were restricted to the remeasurement of existing plots, analysis and reporting on findings. For example, Research Note No. 93 presented the results and conclusions of a spacing and thinning study in a Douglas-fir plantation after 28 years of observation. A review of North American research relevant to operational thinning of lodgepole pine was presented at the Lodgepole Pine Symposium held in Spokane and Vancouver.

Research into forest vegetation management gained momentum with new studies of many techniques for controlling species which compete with preferred timber species. Research protocols were published to ensure uniform experimental procedures when testing vegetation control treatments.

A major project began in the Stewart Lake area near Dawson Creek to evaluate the effectiveness of various reforestation methods with white spruce and lodgepole pine.

Biometrics and Systems

Consultative and analytical services were provided throughout the ministry: Chemical thinning treatments were evaluated. The efficiency of range inventory techniques was improved. New methods for assessing pest damage to forests and effects of fire on future timber supply were developed in cooperation with staff in the Forest Protection Program.

Ecology and Earth Sciences

A Forest Site Degradation and Rehabilitation Committee was formed to focus efforts to reduce the impact of timber harvesting practices on the forest land base. A procedure was developed to determine how much of a forested watershed can be harvested each year. Studies continued on the impact of

harvesting on water yield and quality, and on ways to minimize adverse effects on water users.

Several final reports were prepared for publication by the Fish/Forestry Interaction Program on the Queen Charlotte Islands. Plans for the second phase of the program were initiated. Planning for Phase II of the Integrated Wildlife Intensive Forestry Research Program was completed and approved. A five year program to control knapweed began with working plans for the initial projects. The ecosystem classification program continued to produce field guides and reports.

Tree Physiology

Research continued on treatment of seeds to improve nursery efficiency, nursery practices to improve the quality of seedlings for planting, technology for growing seed orchard trees in moveable containers, control of flowering and use of pollen. Seedlings in nurseries were tested extensively to see if their quality after lifting and storing could be predicted from root growth and freezing tolerance. Spruce seedlings were tested after planting in the field to see what factors are most important to ensure successful plantations.

Tree Improvement

Assessment and maintenance of test plantations continued on schedule. A series of older test plantations were remeasured, providing data on "wide crosses" of Douglas-fir in which parent trees from British Columbia were "crossed" or bred with parents from Washington, Oregon and California. Data from the plantations will guide the breeding program and help establish links between the growth of juvenile trees and the trees' eventual size at maturity.

Douglas-fir trees with selective breeding over two generations were grafted for a coastal seed orchard. In the interior of the province, tree selection continued for spruce, lodgepole pine and interior Douglas-fir; test sites were established; and trees were grafted for spruce and lodgepole pine seed orchards with genetic improvement equivalent to 1.5 and 1.75 generations of fully controlled breeding. Gene archives and tree improvement research were maintained at Cowichan Lake, Vernon and Prince George.

The results of experiments conducted under the Research Program are published each year in the *Forest Research Review*.

Forest Protection Program

The main objective of the Forest Protection Program is to protect the forest and range resources of the province from damage by wildfire and pests, especially insects and disease. Other important concerns are the protection of life and property, the preservation of other natural resource values, and the use of prescribed fire to support resource management objectives.

Forecast expenditure for 1984-85 was $16.0 million, to which allocations of $5.0 million in an Emergency Bark Beetle Program and $1.0 million in Section 88 funds were added during the year. Actual expenditure was $21.0 million (*see* Table D-1). Net of employee benefits, previously paid by the Ministry of Provincial Secretary and Government Services, actual expenditure was $4.9 million greater than in the previous year. This reflected the importance of controlling the mountain pine beetle, a bark beetle pest which has killed large areas of pine forest.

The goal for control of wildfire, in the *Five-Year Forest and Range Resource Program, 1984-1989*, was to keep the annual area burned below 69 000 ha and the timber loss below 2.6 million m^3. In 1984-85, the actual area burned was 19 908 ha and the timber loss was 2.5 million m^3. All forest regions except the Prince George Forest Region met the fire management goals for 1984-85. The fire season was characterized by a hectic two week period, from July 26 to August 9, during which the number of forest fires rose from 686 to 2,290. Three fires in the northern portion of the Prince George Forest Region burned 6 896 ha, or 35% of the provincial total for the year. Tables D-2 through D-4 provide wildfire and damage statistics for each forest region.

For pest control, the objective was to reduce wood losses caused by pests such as bark beetles, defoliators, mistletoes, and diseases. An Emergency Bark Beetle Program was established in the fall of 1984 to combat the rapidly spreading infestations of mountain pine beetle, principally in the Cariboo and Prince Rupert Forest Regions. Tables D-5 and D-6 indicate the estimated damage due to major forest pests in the province.

The expertise and support of the Canadian Forestry Service in the ministry's fire and pest management research activities are acknowledged.

The Forest Protection Program consists of five components, and is closely linked to the Fire Suppression Program.

Administration

All salary and office expenses of the Forest Protection Program in the Victoria, regional and district offices are combined in this component.

Fire Management

For fire detection, 51 lookouts were manned for a total of 2,699 days and air patrols were flown for 3,592 hours. The lightning location system proved to be a useful tool in routing and scheduling air patrols. Staff in eleven forest districts were equipped and trained to extract lightning location maps, weather data and fire histories from the central computer in Victoria. The general public detects a significant number of forest fires. This assistance was encouraged with advertisements and the Zenith 5555 toll free number.

The initial attack organization was restructured throughout the province with redeployment of fire attack crews in the districts and establishment of a 22-man 'helitack' crew in the Prince George Forest Region. This crew can be landed by helicopter, to provide rapid initial attacks on fires. Another helitack crew was stationed in the Cariboo Forest Region. 'Rapattack' crews, capable of rappelling to inaccessible terrain from a hovering helicopter, were stationed in the Kamloops and Nelson Forest Regions. These crews provided a highly mobile force of well trained initial attack personnel that could be relocated to high hazard, high risk areas in anticipation of fire action.

A new fireline certification policy established minimum levels of training and experience required by individuals involved in all aspects of forest fire fighting. All appropriate ministry personnel were certified in 1984-85; certification of forest industry personnel is proposed for 1985-86. Fire overhead teams and a supporting policy were established to ensure cost effective management of fires that have not been contained by 10 a.m. on the day following discovery.

The use of prescribed fire for hazard abatement, silvicultural treatments, wildlife habitat management, range improvement and pest control was a major activity, with 174 000 ha treated in 1984-85. Hazard abatement through the burning of landings after timber harvesting accounted for 37% of this area. Broadcast burns for silviculture treatments, wildlife habitat improvement (conducted in cooperation with the Ministry of Environment) and range improvement accounted for a further 55% of the area.

Pest Management

A substantial Emergency Bark Beetle Program was established in the fall of 1984. The regional expenditures under this program are shown in Table D-1. The program aimed to reduce the rate of spread of specific infestations, protect timber in high hazard areas and increase timber salvage. Activities included aerial and ground surveys, schedules for timber harvesting, road construction or upgrading, and various means to concentrate and eliminate beetles, including the use of chemical attractants (pheromones) and disposal of infested trees.

A survey of root disease in the Vancouver Forest Region showed that the impact of laminated root rot on second growth Douglas-fir was significant, with 85% of the stands of timber showing symptoms of infection. It was estimated that 15% of stands on good sites are void of trees at maturity. The results are being used to calculate long run timber yields in coastal timber supply areas (TSAs), establish control options and establish procedures for surveying and harvesting second-growth Douglas-fir.

The Douglas-fir tussock moth infestations in the Kamloops Forest Region collapsed, as predicted. Only minor defoliation was observed in a few areas. The ministry purchased a supply of nuclear polyhedrosis virus, an effective control agent, from the United States Forest Service for reducing the impact of future infestations.

Estimates of pest losses in each TSA were developed. These will supplement TSA timber yield analyses and guide future pest management efforts.

The ministry representative on the British Columbia Pesticide Control Committee reviewed and made recommendations to the Ministry of Environment on 559 applications for pesticide use, of which 193 were from the Ministry of Forests, 225 from the forest industry and 141 from non-forestry users.

Air Operations

All the ministry's air operations are managed under the Forest Protection Program. Total expenditure was $20.9 million, of which $18.2 million or 87% was spent under the Fire Suppression Program for air tankers, helicopters, aerial detection patrols and air tanker bases (*see* Table D-7). The air operations component of the Forest Protection Program spent 4% of the total, mostly for wages and salaries, and the remainder was incurred by other ministry programs.

A new building at Salmon Arm and upgrading of pavement for air tanker bases at Cranbrook, Dease Lake and Prince George were provided in 1984-85.

The ministry's rapattack program had another successful year of providing rapid initial attack on fires in inaccessible areas. Two contracted Bell 205A-1 multipurpose helitankers and seven 4-man crews took initial action on 131 fires. All 131 actions were successful with an average direct cost of $7,700 per fire. A 9-man contract rappel crew with a Bell 206L-1 helicopter attacked 71 fires successfully.

There were 6 aircraft accidents in 1984-85. Regrettably, one resulted in two fatalities.

Planning, Development and Research

A task force defined the ministry's long term requirement for pest management information. With interviews and a questionnaire circulated provincially, the role of pest management in forest planning and operations was defined, and the required information and linkages to other provincial and national data bases were established.

Efforts to use information on fire ecology continued with the publication of field guides on the role of fire in northern forests, and with field work on the role of fire in drybelt ponderosa pine and Douglas-fir forest types.

A committee, consisting of the directors of the Silviculture, Protection, and Research Branches and their counterparts from the Pacific Forest Centre of the Canadian Forestry Service, was formed to plan and coordinate research on prescribed fire.

Substantial efforts were made to develop a prototype of computer software which provides fire officers with estimates of timber and property values, and simulates expected growth of active fires. This complex software was tested in the Williams Lake Forest District.

Information systems used by fire management and pest management staff in the forest regions and districts were managed and upgraded by the research staff. With the assistance of the Petawawa National Forestry Institute, an advanced fire management information system which provides real time information to assist decision making was tested in the Merritt Forest District.

Fire Suppression Program

The ministry's responsibility to minimize damage from wildfires burning in the province's forest and range land is carried out under the Fire Suppression Program. This program is closely linked to and supported by the Forest Protection Program, but is separately managed and funded.

Expenditure under the Fire Suppression Program cannot be forecast accurately for a particular year, since it depends largely on unpredictable weather conditions. The forecast expenditure, based on long term averages, was $46.0 million; actual expenditure was $37.6 million (*see* Table D-7). Half of the expenditure was for suppression flying, which includes airtanker flying, ground crew support with helicopters and fixed wing aircraft, fire detection flying, contracting air tanker fleets, maintenance of air operations centers and contracting of helicopters

for rapattack and helitack crews throughout the province.

Annual fire control goals for area burned and timber volume loss were met provincially. All forest regions except the Prince George Forest Region achieved their goals. A discussion of the performance is in the Forest Protection Program report. Tables D-2 through D-4 provide wildfire statistics for each forest region.

The fire season followed normal precipitation during the winter, except in the Nelson Forest Region, which had an extreme overwinter drought. The weather in the first three months was wet and cool. As a result, by June 28, only 475 fires had burned 9 762 ha. That compared favourably to the previous year's 858 fires which had burned 78 997 ha in the same period. The month of July brought normal summer weather with a period of stable, hot, dry weather, but fire occurrence stayed relatively low. By July 26, a total of 686 fires had burned only 13 314 ha, but fire hazards were extreme throughout the southern half of the province.

The stable weather ended with storms causing numerous lightning fires. Between July 26 and August 9, 1,604 new fires occurred, of which 1,486 were caused by lightning. During this period 2,100 men were employed on the fire lines, supported by 95 helicopters and 20 air tankers. The fire suppression expenditure during this two week period was $12.7 million. It is to the credit of all those involved in the fire suppression efforts that the area burned during this two week period was only 4 700 ha.

The remainder of the fire season was wet, with fire hazards decreasing considerably for the remainder of August and September. The fire season ended with a total of 3,063 fires which burned 19 908 ha (*see* Tables D-2 and D-3).

Twenty-two campfire closures were issued during the peak of the fire season.

Regrettably, two fire fighters died during fire control action.

Range Management Program

The objective of the Range Management Program is to supply forage for domestic and wild ungulates, while conserving the resource base so that future forage production will continue in a manner consistent with multiple use goals for Crown lands.

Forecast expenditure for 1984-85 was $4.7 million; actual expenditure was $4.5 million (*see* Table E-1). Net of employee benefits, previously paid by the Ministry of Provincial Secretary and Government Services, actual expenditure was $0.2 million greater than in the previous year. The private sector contributed an additional $0.5 million to range improvements on Crown land, through cost sharing agreements with the ministry.

Range Management staff also administered the expenditure of a further $1.5 million funded by the Agriculture and Rural Development Subsidiary Agreement (ARDSA), a joint British Columbia - Canada agreement. Range improvements under the agreement are not included in the remainder of this report or the detailed statistical tables. During the year, 26 Coordinated Resource Management Plans (CRMPs) were completed under ARDSA, for a total of 126 completed to date which cover 6.1 million ha. These plans assisted the ministry in achieving its goals for forage production. ARDSA expired at the end of 1984-85 and no replacement agreement was approved. Total ARDSA expenditure on range improvements from 1977-78 to 1984-85 was $17.8 million. Recent agreements between the British Columbia Ministry of Agriculture and Food, and Agriculture Canada excluded funding of projects on Crown range, indicating a need for alternate sources of funding to maintain current levels of forage production.

The North American cattle industry's prices were generally maintained, while the number of cattle declined slightly. Ranchers in British Columbia experienced continuing financial difficulties, but

demand for use of Crown range continued throughout the province.

Revenue from permits and licences for use of Crown range was $1.2 million in 1984-85, the same level as in the previous year (*see* Table E-2). The ground rent, $0.20 per Animal Unit Month (AUM), was the same as in the previous year, and the fee of $1.02 per AUM, which is related to cattle prices of the previous year, was only one cent lower than in 1983-84.

Grazing permits and grazing licences in 1984-85 are summarized in Table E-3. Utilization was 930,960 AUMs; 93% of the authorized use. The authorized use of 997,649 AUMs again exceeded the goal of 934,000 AUMs in the five-year program and was 2,664 AUMs more than the previous year's authorized use.

Hay cutting permits and hay cutting licences in 1984-85 are summarized in Table E-4. Most of the authorized hay cutting permits and hay cutting licences were for wetlands in the interior of the province. Utilization of haycutting permits and licences was 77%, a normal level.

Range improvements on Crown land funded by the ministry during the year are shown in Table E-5. Range improvements funded under ARDSA are excluded, as are improvements financed privately without ministry assistance.

Seeding was carried out on 11 921 ha of disturbed forest sites and on 1 709 ha for grassland rehabilitation. Seeding of disturbed forest lands increased to levels near those prior to 1983-84. Seeding clearcuts and grazing cattle has cost-effectively increased forage production for domestic and wild ungulates, without significantly reducing timber production. Disturbed forest lands seeded with grass are becoming a more important portion of Crown range in areas such as the Merritt Forest District.

Weed control was principally for knapweed (449 ha) and thistle (51 ha). The spread of knapweed was controlled by chemical means on new knapweed sites. Knapweed, which has spread from approximately 30 000 ha in 1974 to over 80 000 ha in 1983, is a problem of increasing concern. The need for increased chemical and biological control of knapweed was identified, and increased funding for 1985-86 was approved by the government. The long term consequence of knapweed infestation is loss of range for livestock and wildlife.

The average costs of seeding, fence construction and weed control are shown in Table E-6. Private operators funded almost half of these costs in joint projects.

Range inventory work included field sampling of 12 400 ha and initiation of a project in the Nelson Range District to test inventory methodology. Research continued on a number of range topics, especially the biological control of knapweed.

Recreation Management Program

The objectives of the Recreation Management Program are to maintain and enhance recreational values (including the aesthetic values of the forest landscape) and to provide sites and trails which facilitate public recreational use of Crown land.

Forecast expenditure for 1984-85 was $3.6 million; actual expenditure was $3.9 million (*see* Table F-1). Net of employee benefits, previously paid by the Ministry of Provincial Secretary and Government Services, actual expenditure was $0.1 million higher than in the previous year.

Additional funding and labour was provided by federal-provincial job creation programs and by local volunteer groups. This additional work, valued at $0.8 million, assisted in the maintenance of facilities. This sum is not included in Table F-1.

Resource Management

Recreation values exist in areas which are visually or environmentally sensitive, and in features which have cultural, historical or other recreational significance. Recreation Resource Management encompasses the identification, protection and management of these values. Some reduction of personnel, due to informal redeployment of staff time at the district level, hampered recreation resource management in some areas.

A Provincial Recreation Corridor Policy was announced during the year and a master plan for implementation was developed, in cooperation with other ministries and the Outdoor Recreation Council of British Columbia.

Procedures were developed for integrating recreational considerations in timber supply area, tree farm licence, and local resource use planning. A position paper and a policy statement were initiated, regarding use of forest lands for wilderness type recreation.

Refinement and update of the Recreation Resource Inventory continued.

Site and Trail Maintenance

Site maintenance was kept at the low level established in the previous year, with 1,020 sites maintained during the year. Use of recreation sites appeared to drop by some 200,000 visitor days. This apparent decrease may be due to the lower sampling intensity resulting from a lower number of maintenance visits and an increase in the number of "user maintained" sites.

Only 1 182 km of trails were maintained during the year, down 545 km from the previous year. Estimated use of these trails increased from approximately 182,000 visitor days in 1983-84 to 295,000 visitor days in 1984-85. On most trails, maintenance was again limited to an annual inspection and abatement of prominent hazards. On some winter trails, cross-country skiing was enhanced by grooming and track setting. In many cases, ski trail improvements were carried out by volunteer user groups.

The level of funding allowed only modest maintenance of facilities in most areas of the province.

Problems of vandalism, particularly near urban centres, continued to consume significant portions of maintenance funds in some districts.

Site and Trail Development

Development of new sites and trails was very limited. Emphasis was placed on maintaining existing developments rather than making new ones.

III. Summary Statistical Tables

NOTE: All financial data for 1984-85 contained in Section III are unaudited. Totals in certain tables are not equal to the sum of their components, due to rounding.

Table 1: Forecast and Actual Expenditure[1] in 1984-85, by Program

Program	Forecast Expenditure[2]	Revised Forecast Expenditure[3]	Actual Expenditure[4]
	(thousands of dollars)		
Minister	156	156	155
Management	12,079	11,915	11,905
Finance and Administration	53,683	53,331	53,322
Harvesting	67,458	73,300	73,761
Silviculture	105,247	120,646	110,686
Research	7,804	9,150	8,983
Forest Protection	15,970	21,522	20,993
Fire Suppression	46,000	46,000	37,593
Range Management	4,715	4,517	4,476
Recreation Management	3,640	4,041	3,947
TOTAL	**316,752**	**344,578**	**325,821**

Notes:

[1] Includes $18.586 million in employee benefits previously paid by the Ministry of Provincial Secretary and Government Services, distributed among programs.

[2] Forecast expenditure in the *Five-Year Forest and Range Resource Program, 1984-89*.

[3] Includes minor adjustments of the forecast expenditure:

(i) plus Emergency Bark Beetle Program ..... $ 5.000 million
(ii) plus additional allocation to the Small Business Enterprise Program ..... $ 6.500 million
(iii) plus additional Section 88 allocation to the Silviculture Program ..... $ 15.136 million
(iv) plus additional Section 88 allocation to the Forest Protection Program ..... $ 0.960 million
(v) plus inter-ministry transfer to the Management Program ..... $ 0.230 million

[4] Includes all expenditures under the five-year program. Funds are from two sources:

(i) Ministry of Forests budget ..... $260.310 million
(ii) Expenditures by licensees approved under Section 88 of the *Forest Act* ..... $ 65.511 million

Table 2: Forecast and Actual Expenditure[1] in 1984-85, by Forest Region

Forest Region	Forecast Expenditure[2]	Revised Forecast Expenditure[3]	Actual Expenditure[4]
	(thousands of dollars)		
Cariboo	17,843	21,641	23,120
Kamloops	23,822	29,022	32,708
Nelson	21,524	25,022	28,684
Prince George	41,436	45,028	52,871
Prince Rupert	24,763	27,889	29,247
Vancouver	39,634	43,866	43,778
Victoria	147,730	152,110	115,413
TOTAL	**316,752**	**344,578**	**325,821**

Notes:

[1] Includes $18.586 million in employee benefits previously paid by the Ministry of Provincial Secretary and Government Services, paid by the ministry's Victoria headquarters.

[2] Forecast expenditure in the *Five-Year Forest and Range Resource Program, 1984-89*.

[3] Includes minor adjustments of the forecast expenditure:

(i) plus Emergency Bark Beetle Program ..... $ 5.000 million
(ii) plus additional allocation to the Small Business Enterprise Program ..... $ 6.500 million
(iii) plus additional Section 88 allocation to the Silviculture Program ..... $ 15.136 million
(iv) plus additional Section 88 allocation to the Forest Protection Program ..... $ 0.960 million
(v) plus inter-ministry transfer to the Management Program ..... $ 0.230 million

[4] Includes all expenditures under the five-year program. Funds are from two sources:

(i) Ministry of Forests budget ..... $260.310 million
(ii) Expenditures by licensees approved under Section 88 of the *Forest Act* ..... $ 65.511 million

Table 3: Composition of Actual Expenditure in 1984-85, by Program

Program	Wages[1] & Salaries	Materials, Supplies & Expense	Contracts	Section 88	TOTAL
		(thousands of dollars)			
Minister	150	5	—	—	155
Management	10,249	984	672	—	11,905
Finance and Administration	22,121	25,581[2]	5,620	—	53,322
Harvesting	40,368	9,410	8,670	15,313	73,761
Silviculture	23,472	13,932	24,873	48,409	110,686
Research	6,220	1,341	947	475	8,983
Forest Protection	11,973	3,930	3,776	1,314	20,993
Fire Suppression	8,768	8,161	20,664	—	37,593
Range Management	2,758	885	833	—	4,476
Recreation Management	2,531	780	636	—	3,947
TOTAL	**128,610**	**65,009**	**66,691**	**65,511**	**325,821**

Notes:

[1] Includes $18.586 million in employee benefits previously paid by the Ministry of Provincial Secretary and Government Services, distributed among programs.

[2] Includes $15.934 million paid to the British Columbia Buildings Corporation for building occupancy charges throughout the province.

Table 4: Composition of Actual Expenditure in 1984-85, by Forest Region

Forest Region	Wages & Salaries	Materials, Supplies & Expenses	Contracts	Section 88	TOTAL
			(thousands of dollars)		
Cariboo	9,791	4,497	3,588	5,244	23,120
Kamloops	12,878	5,185	6,596	8,049	32,708
Nelson	12,337	5,070	5,550	5,727	28,684
Prince George	14,585	7,640	12,019	18,627	52,871
Prince Rupert	11,069	3,341	5,671	9,166	29,247
Vancouver	18,911	6,752	4,930	13,185	43,778
Victoria	49,039[1]	32,524[2]	28,337	5,513	115,413
TOTAL	**128,610**	**65,009**	**66,691**	**65,511**	**325,821**

Notes:

[1] Includes $18.586 million in employee benefits previously paid by the Ministry of Provincial Secretary and Government Services.

[2] Includes $15.934 million paid to the British Columbia Buildings Corporation for building occupancy charges throughout the province.

Table 5: Forest and Range Revenue in 1984-85, by Forest Region[1]

Forest Region	Forest Revenue[2]	Range Revenue	TOTAL
		(thousands of dollars)	
Cariboo	11,593	443	12,036
Kamloops	15,623	401	16,024
Nelson	10,664	100	10,764
Prince George	29,306	168	29,474
Prince Rupert	31,591	39	31,630
Vancouver	87,381	2	87,383
Victoria	1,191	—	1,191
TOTAL	**187,349**	**1,153**	**188,502**

Notes:

[1] Forest and range revenue in Tables 5, B-2 and E-2 is presented on an accrual basis.

[2] Before application of $65.511 million in credits against stumpage, shown by program and forest region in Tables 3 and 4 under the column heading "Section 88".

Table 6: Forest Land in British Columbia, by Forest Region[1]

Forest Region	Stocked With Mature Timber	Stocked With Immature Timber	NSR[2] and NC Brush[3]		TOTAL
			Natural Stocking Expected	Natural Stocking Doubtful	
	(thousands of hectares)				
Cariboo	3 526	2 224	90	68	5 908
Kamloops	2 385	1 828	123	71	4 407
Nelson	1 546	2 084	98	146	3 874
Prince George	9 249	6 326	1 058	1 085	17 718
Prince Rupert	7 050	2 361	467	236	10 114
Vancouver	3 093	1 581	83	29	4 786
TOTAL	**26 849**	**16 404**	**1 919**	**1 635**	**46 807**

Notes:

[1] Source: *1984 Forest and Range Resource Analysis*. Includes forest land on which timber harvesting is restricted partly or wholly by problems such as timber quality, accessibility and environmental sensitivity. Excludes:

(i) Crown forest land in timber licences which are outside tree farm licences,
(ii) private forest land outside tree farm licences, and
(iii) federal forest land.

[2] Not Satisfactorily Restocked. Areas on which forest stands have been disturbed over 75 percent by fire, harvesting or other causes and have not restocked with sufficient trees of commercial species.

[3] Non-Commercial Brush. Areas that have been invaded and covered by brush.

Table 7: Deletion of Land from Provincial Forests in 1984-85, by Forest Region

Forest Region	Designated Use of Land Deleted					
	Agriculture	Industry and Transportation	Parks and Recreation	Settlement	Other[1]	TOTAL
	(hectares)					
Cariboo	23	9	—	4	—	36
Kamloops	58	—	14	72	—	144
Nelson	—	106	—	24	—	130
Prince George	527	48	608	64	407	1 654
Prince Rupert	—	—	—	46	—	46
Vancouver	—	7	—	8	—	15
TOTAL	**608**	**170**	**622**	**218**	**407**	**2 025**

Note:

[1] Land exchange.

IV. Detailed Statistical Tables

NOTE: All financial data for 1984-85 contained in Section IV are unaudited. Totals in certain tables are not equal to the sum of their components, due to rounding.

Table A-1: Finance and Administration Program Expenditure[1] in 1984-85, by Forest Region

Forest Region	Financial Services	Personnel Services	Systems Services	Technical and Administrative Services	TOTAL
			(thousands of dollars)		
Cariboo	601	93	283	1,208	2,185
Kamloops	1,163	80	285	983	2,511
Nelson	909	88	282	1,206	2,485
Prince George	1,282	97	334	1,803	3,516
Prince Rupert	1,423	90	148	1,177	2,838
Vancouver	1,675	99	96	2,050	3,920
Victoria	5,425	1,022	6,437	19,492[2]	32,376
TOTAL	**12,478**	**1,569**	**7,865**	**27,919**	**49,831**

Notes:

[1] Excludes $3.491 million in employee benefits. Expenditure for employee benefits was also excluded in previous annual reports.

[2] Includes $15.934 million paid to the British Columbia Buildings Corporation for building occupancy charges throughout the province.

Table A-2: Ministry of Forests Personnel in 1984-85, by Program

Program	Turnover in Regular Positions		Regular Employment[1]		Seasonal Employment[2]		Total Employment	
	Vacated	Filled	Allocated	Actual	Allocated	Actual[3]	Allocated	Actual
	(number)		(full time equivalents[4])					
Minister	—	—	5	5	—	—	5	5
Management	22	9	256	224	—	—	256	224
Finance and Administration	73	91	812	737	15	11	827	748
Harvesting	162	28	1,315	1,160	41	54	1,356	1,213
Silviculture	64	10	525	436	297	317	822	753
Research	10	42	163	152	17	24	180	176
Forest Protection	17	9	237	220	112	152	349	372
Fire Suppression	2	—	7	7	41	53	48	60
Range Management	7	7	85	73	2	2	87	75
Recreation Management	3	5	70	64	2	2	72	65
TOTAL	**360**	**201**	**3,475**	**3,077**	**527**	**616**	**4,002**	**3,692**

Notes:
[1] Employment of a continuous nature.
[2] Employment of a discontinuous nature.
[3] Includes vacant regular full time equivalents (FTEs) used for seasonal employment.
[4] The concept of full time equivalent (FTE), defined as 1,827 hours (the normal working hours in one year for one full time employee), is used to account for all personnel on a similar basis.

Table A-3: Ministry of Forests Personnel in 1984-85, by Forest Region

Forest Region	Turnover in Regular Positions		Regular Employment[1]		Seasonal Employment[2]		Total Employment	
	Vacated	Filled	Allocated	Actual	Allocated	Actual[3]	Allocated	Actual
	(number)		(full time equivalents[4])					
Cariboo	22	7	291	289	49	61	340	349
Kamloops	11	27	379	326	43	86	421	413
Nelson	40	32	365	332	45	53	410	386
Prince George	51	39	411	355	52	71	463	426
Prince Rupert	42	29	360	310	44	60	404	370
Vancouver	67	6	708	636	13	42	721	678
Victoria	127	61	961	829	281	242	1,243	1,071
TOTAL	**360**	**201**	**3,475**	**3,077**	**527**	**616**	**4,002**	**3,692**

Notes:
[1] Employment of a continuous nature.
[2] Employment of a discontinuous nature.
[3] Includes vacant regular full time equivalents (FTEs) used for seasonal employment.
[4] The concept of full time equivalent (FTE), defined as 1,827 hours (the normal working hours in one year for one full time employee), is used to account for all personnel on a similar basis.

Table B-1: Harvesting Program Expenditure[1] in 1984-85, by Forest Region

Forest Region	Planning and Inventory	Valuation	Timber Management	Engineering and Roads	Scaling	Small Business Enterprise Program[2]	TOTAL
			(thousands of dollars)				
Cariboo	498	622	1,618	2,283	482	784	6,287
Kamloops	621	355	2,190	1,521	736	814	6,237
Nelson	655	508	2,087	3,146	792	1,007	8,195
Prince George	995	841	1,840	7,213	1,189	708	12,786
Prince Rupert	881	650	1,335	1,691	1,522	1,041	7,120
Vancouver	683	2,399	3,257	4,789	3,742	2,086	16,956
Victoria	4,480	2,238	1,436	1,717	—	—	9,871
TOTAL	**8,813**	**7,613**	**13,763**	**22,360**	**8,463**	**6,440**	**67,452**

Notes:
[1] Excludes $6.309 million in employee benefits. Expenditure for employee benefits was also excluded in previous annual reports.
[2] Separately funded.

Table B-2: Forest Revenue in 1984-85, by Forest Region

Forest Region	Annual Rents	Stumpage Accrued[1] Net Stumpage	Plus Credits	Gross Stumpage	Royalty & Export	Scaling	Interest	Other[2]	TOTAL
				(thousands of dollars)					
Cariboo	1,606	3,792	5,698	9,490	—	256	162	79	11,593
Kamloops	1,893	3,892	9,133	13,025	—	508	136	61	15,623
Nelson	1,649	2,364	5,469	7,833	234	501	294	153	10,664
Prince George	3,626	5,605	18,580	24,185	—	687	636	172	29,306
Prince Rupert	2,733	14,212	9,473	23,685	3,132	1,077	124	840	31,591
Vancouver	6,526	48,945	17,158	66,103	11,297	2,389	654	412	87,381
Victoria	568	—	—	—	—	—	—	623	1,191
TOTAL	**18,601**	**78,810**	**65,511**	**144,321**	**14,663**	**5,418**	**2,006**	**2,340**	**187,349**

Notes:
[1] Includes stumpage billed and an estimate of stumpage on timber scaled but not yet billed.
[2] Includes forest protection agreements and miscellanea.

Table B-3: Average Stumpage Prices[1] Received on Timber Billed[2] from Tree Farm Licences, Forest Licences, Timber Sale Harvesting Licences and Timber Sale Licences other than Small Business Sales in 1984-85, by Forest Region and Species

Forest Region[3]	Balsam		Cedar		Cypress		Douglas-fir	
	Volume	Price	Volume	Price	Volume	Price	Volume	Price
	(000 m^3)	($/$m^3$)	(000 m^3)	($/$m^3$)	(000 m^3)	($/$m^3$)	(000 m^3)	($/$m^3$)
Cariboo (C)	*	1.10	—	—	—	—	—	—
Cariboo (I)	284	1.08	212	1.46	—	—	1 083	1.29
Kamloops	659	1.11	382	1.51	*	1.28	1 187	1.31
Nelson	494	1.17	562	1.97	—	—	539	1.34
Prince George	1 676	1.12	28	1.53	—	—	222	1.30
Prince Rupert (C)	288	1.98	801	5.80	68	6.03	41	2.95
Prince Rupert (I)	865	1.08	158	1.48	*	1.26	*	1.16
Vancouver (C)	2 595	2.55	3 079	9.27	397	9.62	1 448	3.88
Vancouver (I)	81	1.41	49	6.02	*	4.44	200	1.85
TOTAL	**6 942**	**1.69**	**5 271**	**6.78**	**465**	**9.09**	**4 720**	**2.14**

Forest Region	Hemlock		Larch		Lodgepole Pine		Spruce	
	Volume	Price	Volume	Price	Volume	Price	Volume	Price
	(000 m^3)	($/$m^3$)	(000 m^3)	($/$m^3$)	(000 m^3)	($/$m^3$)	(000 m^3)	($/$m^3$)
Cariboo (C)	—	—	—	—	2	.99	6	1.12
Cariboo (I)	22	.95	—	—	2 868	.93	1 574	1.22
Kamloops	117	.41	61	1.30	2 585	1.13	1 827	1.25
Nelson	299	.33	235	1.33	1 445	.62	1 344	1.28
Prince George	6	.93	*	.54	4 119	1.12	8 250	1.20
Prince Rupert (C)	1 214	1.56	—	—	*	1.37	588	6.66
Prince Rupert (I)	919	.94	—	—	2 251	1.07	2 020	1.20
Vancouver (C)	4 948	2.45	—	—	1	1.50	170	8.96
Vancouver (I)	87	1.41	—	—	27	1.20	51	1.48
TOTAL	**7 612**	**2.00**	**296**	**1.33**	**13 298**	**1.02**	**15 830**	**1.50**

Forest Region	White Pine		Other Species		All Species	
	Volume	Price	Volume	Price	Volume	Price
	(000 m^3)	($/$m^3$)	(000 m^3)	($/$m^3$)	(000 m^3)	($/$m^3$)
Cariboo (C)	—	—	—	—	8	1.10
Cariboo (I)	*	1.44	1	1.08	6 044	1.10
Kamloops	46	5.90	31	1.58	6 895	1.24
Nelson	83	7.39	46	1.28	5 047	1.21
Prince George	*	.85	1	.75	14 302	1.17
Prince Rupert (C)	*	1.84	*	1.56	3 000	3.85
Prince Rupert (I)	*	1.02	15	.69	6 228	1.10
Vancouver (C)	21	1.88	5	1.28	12 664	4.61
Vancouver (I)	3	1.59	4	1.50	502	2.03
TOTAL	**153**	**6.09**	**103**	**1.30**	**54 690**	**2.12**

Notes:

[1] Gross stumpage.

[2] Excludes firmwood rejects and waste.

[3] Three forest regions are split into coastal (C) and interior (I) areas.

* Indicates volume less than 500 m^3.

Table B-4: Stumpage Revenue from the Small Business Enterprise Program in 1984-85, by Forest Region

Forest Region	Volume Billed[1]	Stumpage Appraised	Bonus Bid[2]	Stumpage Billed	Stumpage Billed as a % of Stumpage Appraised
	($000 m^3$)	(thousands of dollars)			(%)
Cariboo	753	941	2,130	3,071	326
Kamloops	555	759	3,372	4,131	544
Nelson	365	463	890	1,353	292
Prince George	1,232	1,403	4,791	6,194	441
Prince Rupert					
Coast	303	1,060	483	1,543	146
Interior	753	753	1,629	2,382	316
Vancouver					
Coast	606	2,325	3,953	6,278	270
Interior	33	81	417	498	615
TOTAL	**4 600**	**7,785**	**17,665**	**25,450**	**327**

Notes:
[1] Excludes firmwood rejects and waste.
[2] Bid for timber, in addition to stumpage appraised.

Table B-5: Volume of All Products Billed[1] in 1984-85, by Forest Region and Land Status

Land Status and Form of Rights to Timber	Cariboo	Kamloops	Nelson	Prince George	Prince Rupert	Vancouver	TOTAL
				(thousands of cubic metres)			
Crown Land							
Tree Farm Licence[2]	156	794	1 154	468	2 357	7 370	12 299
Timber Sale Harvesting Licence	—	—	—	2 954	—	—	2 954
Forest Licence	5 765	5 996	3 425	10 453	6 478	5 312	37 429
Timber Sale Licence	914	686	855	1 861	1 474	1 152	6 942
Licence to Cut	247	12	51	1 081	106	165	1 662
Timber Licence							
Within Tree Farm Licence	—	—	—	—	596	3 393	3 989
Outside Tree Farm Licence	—	116	146	—	261	1 890	2 413
Other[3]	100	247	104	29	128	347	955
Sub-total	7 182	7 851	5 735	16 846	11 400	19 629	68 643
Private Land							
Within Tree Farm Licence	—	—	18	7	75	572	672
Outside Tree Farm Licence	485	340	867	403	137	2 796	5 028
Federal Land and Indian Reserves	43	19	9	5	3	49	128
TOTAL	**7 710**	**8 210**	**6 629**	**17 261**	**11 615**	**23 046**	**74 471**

Notes:
[1] Includes firmwood rejects.
[2] Includes timber from Crown land not subject to other timber licences.
[3] Includes woodlot licences, right-of-way, beachcomb, trespass and miscellanea.

Table B-6: Volume of All Products Billed[1,2] in 1984-85, by Forest Region and Species

Forest Region	Balsam	Cedar	Cypress	Douglas-fir	Hemlock	Larch	Lodgepole Pine	Spruce	White Pine	Other Species	TOTAL
					(thousands of cubic metres)						
Cariboo (C)	*	—	—	—	—	—	3	7	—	—	10
Prince Rupert (C)	339	1 207	104	64	1 634	—	1	802	*	49	4 200
Vancouver (C)	4 232	5 264	589	3 451	8 480	—	5	280	47	128	22 476
Sub-total, Coast	4 571	6 471	693	3 515	10 114	—	9	1 089	47	177	26 686
Cariboo (I)	316	232	—	1 490	24	—	3 694	1 917	*	27	7 700
Kamloops	726	548	*	1 587	182	76	2 907	2 050	62	72	8 210
Nelson	595	873	—	856	400	343	1 739	1 604	124	95	6 629
Prince George	1 927	43	—	304	15	*	5 062	9 878	*	32	17 261
Prince Rupert (I)	1 006	216	*	*	1 090	—	2 654	2 383	*	66	7 415
Vancouver (I)	88	56	*	237	103	—	28	51	3	4	570
Sub-total, Interior	4 658	1 968	*	4 474	1 814	419	16 084	17 883	189	296	47 785
TOTAL	**9 229**	**8 439**	**693**	**7 989**	**11 928**	**419**	**16 093**	**18 972**	**236**	**473**	**74 471**

Notes:

[1] Includes firmwood rejects.

[2] Includes all harvesting on Crown, private and federal land and Indian Reserves.

* Indicates volume less than 500 m^3.

Table B-7: Area Harvested in 1984-85, by Forest Region

Forest Region	Type of Harvest	Crown Land				Private Land				TOTAL
		TFL[1]	TSA[2]	Other[3]	Sub-total	TFL[4]	TF[5]	Other[6]	Sub-total	
		(hectares)								
Cariboo	Clear Cutting	372	24 146	94	24 612	—	—	149	149	24 761
	Selective Cutting	—	10 824	8	10 832	—	—	260	260	11 092
	Sub-total	372	34 970	102	35 444	—	—	409	409	35 853
Kamloops	Clear Cutting	2 989	21 021	442	24 452	—	—	333	333	24 785
	Selective Cutting	446	6 211	4	6 661	—	—	1 143	1 143	7 804
	Sub-total	3 435	27 232	446	31 113	—	—	1 476	1 476	32 589
Nelson	Clear Cutting	2 689	10 194	1 425	14 308	614	753	1 160	2 527	16 835
	Selective Cutting	801	6 629	104	7 534	—	121	630	751	8 285
	Sub-total	3 490	16 823	1 529	21 842	614	874	1 790	3 278	25 120
Prince George	Clear Cutting	1 737	50 441	3 992	56 170	—	—	633	633	56 803
	Selective Cutting	—	117	—	117	—	—	—	—	117
	Sub-total	1 737	50 558	3 992	56 287	—	—	633	633	56 920
Prince Rupert	Clear Cutting	5 316	21 368	243	26 927	1 327	—	277	1 604	28 531
	Selective Cutting	—	923	—	923	—	—	—	—	923
	Sub-total	5 316	22 291	243	27 850	1 327	—	277	1 604	29 454
Vancouver	Clear Cutting	12 018	11 497	1 239	24 754	5 550	2 958	2 046	10 554	35 308
	Selective Cutting	—	1 148	15	1 163	—	10	—	10	1 173
	Sub-total	12 018	12 645	1 254	25 917	5 550	2 968	2 046	10 564	36 481
Sub-total	Clear Cutting	25 121	138 667	7 435	171 223	7 491	3 711	4 598	15 800	187 023
	Selective Cutting	1 247	25 852	131	27 230	—	131	2 033	2 164	29 394
TOTAL		**26 368**	**164 519**	**7 566**	**198 453**	**7 491**	**3 842**	**6 631**	**17 964**	**216 417**

Notes:

[1] Includes Crown land within tree farm licences.

[2] Includes Crown land within timber supply areas; excluding tree farm licences, woodlot licences, farm leases, federal lands and Indian Reserves.

[3] Includes Crown land within woodlot licences, farm leases, federal lands and Indian Reserves.

[4] Includes private land within tree farm licences.

[5] Includes private land within certified tree farms, but outside tree farm licences.

[6] Includes private land outside tree farm licences and certified tree farms.

Table B-8: Volume of Logs Exported from British Columbia in 1984-85, by Species

Species	Exports Under Permit[1]	Other[2]	TOTAL
	(thousands of cubic metres)		
Balsam	631	89	720
Cedar	107	18	125
Cypress	55	10	65
Douglas-fir	362	356	718
Hemlock	1 062	177	1 239
Lodgepole Pine	34	2	36
Spruce	435	1	436
Other Softwood	1	1	2
Cottonwood	86	—	86
Other Hardwood	7	13	20
TOTAL	**2 780**	**667**	**3 447**

Notes:

[1] Export permit granted under Section 137 of the *Forest Act*. Logs harvested from provincial Crown land, private land within a tree farm licence area, and from private land granted by the Crown after March 12, 1906.

[2] No export permit required under the *Forest Act*. Logs harvested from private land that was granted by the Crown prior to March 13, 1906, and is not within a tree farm licence area, and logs harvested from federal land and Indian Reserves.

Table B-9: Small Business Enterprise Program in 1984-85, by Forest Region

Forest Region	Registrants[1]		Sales		Volume Sold[4]	Value[5]
	Cat. 1[2]	Cat. 2[3]	Cat. 1	Cat. 2		
	(number)				(000 m³)	($000)
Cariboo	398	71	298	48	872	3,169
Kamloops	567	162	123	35	901	4,654
Nelson	514	221	77	42	465	1,790
Prince George	550	132	59	29	1 336	5,860
Prince Rupert	595	237	180	50	1 380	5,442
Vancouver	1,420	176	232	29	1 151	11,000
TOTAL	**4,044**	**999**	**969**	**233**	**6 105**	**31,915**

Notes:

[1] On March 31, 1985.

[2] Category 1: Registrants who, at the time of application, did not own a timber processing facility.

[3] Category 2: Registrants who, at the time of application, owned a timber processing facility.

[4] Tendered volume.

[5] Value based upon appraised price at time of sale, plus bonus bid.

Table B-10: Number of Licences as at March 31, 1985, by Forest Region

Form of Rights to Timber	Cariboo	Kamloops	Nelson	Prince George	Prince Rupert	Vancouver	TOTAL
				(number)			
Tree Farm Licence[1]	1	7	5	2	6	14	32
Farm Woodlot and Woodlot Licence	29	12	20	17	9	9	96
Timber Sale Harvesting Licence	—	—	—	6	—	—	6
Forest Licence	17	27	21	26	33	45	169
Timber Sale Licence (Major)	18	43	32	32	21	50	196
Timber Sale Licence (Minor), SBEP[2]	536	292	213	200	336	146	1 723
Other[3]	512	648	495	1 619	325	8 870	12 469
Sub-total	1 113	1 029	786	1 902	730	9 134	14 691
Special Forest Licence	1[4]	—	—	—	—	1[5]	2
TOTAL	**1 114**	**1 029**	**786**	**1 902**	**730**	**9 135**	**14 693**

Notes:

[1] Tree Farm Licences 25, 39 and 47 are partly in both Vancouver and Prince Rupert Forest Regions.

[2] Small Business Enterprise Program.

[3] Licences issued within the Forest Service Reserve and tree farm licence areas, including timber sale licences and forest licences (not itemized above), cash sales and free use permits. Free use permits issued between April 1, 1984, and March 31, 1985, are included. These licences are for timber damaged by fire, insects or wind; special forest products (e.g. shake bolts) and firewood.

[4] In Lot 7741 Military Reserve.

[5] For deciduous trees.

Table B-11: Volume Committed as at March 31, 1985, by Forest Region

Form of Rights to Timber	Cariboo	Kamloops	Nelson	Prince George	Prince Rupert	Vancouver	TOTAL
				(thousands of cubic metres)			
Tree Farm Licence[1]	119	772	1 630	557	4 013	11 724	18 815
Farm Woodlot and Woodlot Licence	72	70	46	122	82	75	467
Timber Sale Harvesting Licence	—	—	—	3 563	—	—	3 563
Forest Licence	5 277	6 075	3 441	9 730	6 827	6 254	37 604
Timber Sale Licence (Major)	175	58	59	225	61	181	759
Timber Sale Licence (Minor), SBEP[2]	473	717	445	1 388	1 004	883	4 910
Forest Service Reserve[3]	53	80	580	145	177	120	1 155
Sub-total	6 169	7 772	6 201	15 730	12 164	19 237	67 273
Special Forest Licence	32[4]	—	—	—	—	10[5]	42
TOTAL	**6 201**	**7 772**	**6 201**	**15 730**	**12 164**	**19 247**	**67 315**

Notes:

[1] Tree Farm Licences 25, 39 and 47 are partly in both Vancouver and Prince Rupert Forest Regions.

[2] Volume apportioned to the Small Business Enterprise Program.

[3] Volume apportioned to the Forest Service Reserve. Timber from the reserve is sold under timber sale licences and forest licences (not itemized above), cash sales and free use permits.

[4] In Lot 7741 Military Reserve.

[5] For deciduous trees.

Table B-12: Road Inventory, with Additions and Reductions in 1984-85, by Forest Region and Road Class

Forest Region	Road Class[1]	Initial Inventory[2]	Additions			Reductions			Final Inventory[6]
			Construction	Improvement[3]	Transfer In[4]	Cancellation	Improvement[3]	Transfer Out[5]	
		(kilometres)							
Cariboo	1	—	—	—	—	—	—	—	—
	2	—	—	—	—	—	—	—	—
	3	431	13	13	18	—	47	40	388
	4	1 293	51	56	—	—	13	42	1 344
	5	816	68	—	31	—	9	—	906
	6	443	—	—	16	—	—	—	459
Kamloops	1	—	—	—	—	—	—	—	—
	2	—	—	—	—	—	—	—	—
	3	—	—	—	141	—	—	—	141
	4	417	11	16	—	—	—	—	444
	5	2 474	21	41	12	37	—	4	2 506
	6	4 185	51	—	29	73	57	4	4 132
Nelson	1	—	—	—	—	—	—	—	—
	2	—	—	—	—	—	—	—	—
	3	155	—	—	25	—	—	—	180
	4	400	11	—	—	—	—	—	411
	5	2 764	46	—	—	—	—	—	2 810
	6	4 138	59	—	—	—	—	—	4 197
Prince George	1	91	—	—	—	—	—	1	90
	2	174	5	—	—	2	—	38	139
	3	2 060	11	—	55	280	—	—	1 846
	4	2 059	64	14	—	—	—	—	2 137
	5	448	10	—	—	34	14	—	410
	6	357	12	—	24	78	—	—	315
Prince Rupert	1	66	—	—	2	—	—	—	68
	2	—	—	—	—	—	—	—	—
	3	311	1	17	8	—	—	20	317
	4	501	1	—	30	—	—	—	532
	5	542	45	3	17	—	17	—	590
	6	263	8	—	—	—	3	—	268
Vancouver	1	4	—	—	—	—	—	—	4
	2	8	—	—	—	—	—	—	8
	3	7	—	—	—	—	—	—	7
	4	131	6	3	—	—	—	—	140
	5	1 167	46	36	237	—	3	—	1 484
	6	597	7	—	14	1	36	—	582
Sub-total	1	161	—	—	2	—	—	1	163
	2	182	5	—	—	2	—	38	147
	3	2 964	25	30	247	280	47	60	2 880
	4	4 801	145	88	30	—	13	42	5 008
	5	8 211	235	80	297	71	43	4	8 706
	6	9 982	138	—	83	151	95	4	9 953
TOTAL		**26 301**	**548**	**198**	**659**	**504**	**198**	**149**	**26 855**

Notes:

[1] Definitions: Class 1 — Double lane, 10 m surface width. Class 4 — Single lane, 6 m surface width.
Class 2 — Double lane, 9 m surface width. Class 5 — Single lane, 5 m surface width.
Class 3 — Double lane, 8 m surface width. Class 6 — Single lane, 4 m surface width.

[2] April 1, 1984.

[3] Adjustment for roads that changed from one road class to another.

[4] Transfer to Ministry of Forests from another government agency or private ownership.

[5] Transfer from Ministry of Forests to another government agency or private ownership.

[6] March 31, 1985.

Table B-13: Bridge Inventory, with Additions and Reductions in 1984-85, by Forest Region and Bridge Class

Forest Region	Bridge Class[1]	Initial Inventory[2]	Additions		Reductions		Final Inventory[5]
			Construction	Transfer In[3]	Deletion	Transfer Out[4]	
		(number)					
Cariboo	P	16	1	2	—	—	19
	S	9	5	2	—	3	13
	T	77	6	7	1	3	86
	M	4	—	—	—	—	4
Kamloops	P	15	3	10	—	—	28
	S	19	1	—	—	6	14
	T	408	17	4	8	30	391
	M	—	—	—	—	—	—
Nelson	P	45	2	—	—	—	47
	S	33	2	3	—	—	38
	T	664	10	—	6	15	653
	M	20	2	—	—	—	22
Prince George	P	103	11	9	1	—	122
	S	52	—	2	—	3	51
	T	195	2	10	17	33	157
	M	112	3	—	3	22	90
Prince Rupert	P	30	—	1	—	2	29
	S	9	1	—	—	1	9
	T	122	6	3	5	5	121
	M	9	1	4	—	—	14
Vancouver	P	30	3	7	—	12	28
	S	15	15	22	1	—	51
	T	380	11	32	8	128	287
	M	3	—	—	—	1	2
Sub-total	P	239	20	29	1	14	273
	S	137	24	29	1	13	176
	T	1,846	52	56	45	214	1,695
	M	148	6	4	3	23	132
TOTAL		**2,370**	**102**	**118**	**50**	**264**	**2,276**

Notes:

[1] Definitions: P — Permanent: Substructure and superstructure have an expected lifespan of 50 years.
S — Semi-permanent: Substructure has an expected lifespan of 50 years; superstructure of 10-15 years.
T — Temporary: Substructure and superstructure have an expected life span of 10-15 years.
M — Multiplate: Metal pipearches and culverts that have an expected lifespan of 50 years.

[2] April 1, 1984.

[3] Transfer to Ministry of Forests from another government agency or private ownership.

[4] Transfer from Ministry of Forests to another government agency or private ownership.

[5] March 31, 1985.

Table C-1: Silviculture Program Expenditure[1] in 1984-85, by Forest Region

Forest Region	Administration	Basic	Intensive	Nursery Operations	Seed Operations	TOTAL
			(thousands of dollars)			
Cariboo	1,497	3,614	1,051	—	—	6,162
Kamloops	2,738	8,189	1,753	—	—	12,680
Nelson	1,722	4,036	858	—	—	6,616
Prince George	2,834	13,497	4,487	—	—	20,818
Prince Rupert	1,844	7,666	1,033	—	—	10,543
Vancouver	4,655	8,961	2,765	—	—	16,381
Victoria	1,787	1,027	—	27,874[2]	3,283	33,971
TOTAL	**17,077**	**46,990**	**11,947**	**27,874**	**3,283**	**107,171**

Notes:
[1] Excludes $3.515 million in employee benefits. Expenditure for employee benefits was also excluded in previous annual reports.
[2] Includes $16.991 million for ministry nurseries, $6.825 million for commercial nurseries and $4.058 million for Section 88 credits for licensee nurseries.

Table C-2: Surveys of Natural Restocking and Plantations on Crown Land in 1984-85, by Forest Region

Forest Region	Natural Restocking			Plantations			TOTAL
	Basic[1]	Intensive[2]	Sub-total	Basic	Intensive	Sub-total	
				(hectares)			
Cariboo	15 489	18 686	34 175	8 026	3 851	11 877	46 052
Kamloops	13 053	24 760	37 813	9 587	4 629	14 216	52 029
Nelson	23 080	26 737	49 817	9 584	—	9 584	59 401
Prince George	16 705	35 296	52 001	32 057	7 270	39 327	91 328
Prince Rupert	12 790	4 941	17 731	11 353	249	11 602	29 333
Vancouver	23 878	26 596	50 474	34 381	2 679	37 060	87 534
TOTAL	**104 995**	**137 016**	**242 011**	**104 988**	**18 678**	**123 666**	**365 677**

Notes:
[1] Recently denuded land.
[2] Land denuded and not treated for more than a few years.

Table C-3: Site Preparation for Natural Restocking on Crown Land in 1984-85, by Forest Region

Treatment	Cariboo	Kamloops	Nelson	Prince George	Prince Rupert	Vancouver	TOTAL
				(hectares)			
Broadcast Burned	—	—	161	—	200	616	977
Bunched (Piled) and Burned	—	133	153	102	—	—	388
Spot Burned	—	262	2 058	—	—	125	2 445
Drag Scarified	984	1 189	425	5 815	273	—	8 686
Blade Scarified	—	1 198	403	46	—	—	1 647
Bunched Only	—	247	317	—	—	—	564
Other Mechanical[1]	914	—	78	—	—	—	992
Chemical Only	—	—	—	—	—	—	—
Residual Falling (Including Snags)	55	29	—	14	—	362	460
Snag Falling Only	—	—	138	—	—	12	150
Other[2]	1 135	—	160	—	—	—	1 295
Sub-total	3 088	3 058	3 893	5 977	473	1 115	17 604
No Further Treatment[3]	5 413	10 209	2 900	4 191	9 108	4 363	36 184
TOTAL	**8 501**	**13 267**	**6 793**	**10 168**	**9 581**	**5 478**	**53 788**

Notes:

[1] Includes use of a Marden brush chopper, V-plow, and disc trencher.

[2] Includes mistletoe control, cabling and knockdown of trees over 3 metres high.

[3] Land which was surveyed and found not to require treatment to promote natural restocking.

Table C-4: Site Preparation for Planting on Crown Land in 1984-85, by Forest Region

Treatment	Cariboo	Kamloops	Nelson	Prince George	Prince Rupert	Vancouver	TOTAL
				(hectares)			
Broadcast Burned	3 727	4 769	2 719	13 092	4 737	6 089	35 133
Bunched (Piled) and Burned	1 865	1 658	572	1 976	369	8	6 448
Spot Burned	—	116	689	221	—	132	1 158
Drag Scarified	264	—	190	917	—	—	1 371
Blade Scarified	106	137	75	6 053	1 645	8	8 024
Bunched Only	222	1 020	232	1 987	974	19	4 454
Other Mechanical[1]	391	924	200	2 821	2 925	295	7 556
Chemical Only	—	—	159	354	48	170	731
Residual Falling (Including Snags)	27	673	165	653	135	1 124	2 777
Snag Falling Only	—	187	—	261	4	—	452
Other[2]	556	1 101	219	3 440	—	3	5 319
Sub-total	7 158	10 585	5 220	31 775	10 837	7 848	73 423
No Further Treatment[3]	4 969	6 012	4 401	—	4 670	2 066	22 118
TOTAL	**12 127**	**16 597**	**9 621**	**31 775**	**15 507**	**9 914**	**95 541**

Notes:

[1] Includes use of a Marden brush chopper, Leno scarifier, V-plow, disc trencher, Bracke scarifier, ripper plow, backhoe and Bracke mounder.

[2] Includes mistletoe control, cabling and knockdown of trees over 3 metres high.

[3] Land which was surveyed and found not to require treatment prior to planting.

Table C-5: Crown Land Planted in 1984-85, by Forest Region

Forest Region	Area Planted			Trees Planted		
	Basic	Intensive	TOTAL	Basic	Intensive	TOTAL
	(hectares)			(thousands of trees)		
Cariboo	6 058	1 459	7 517	7,855	1,690	9,544
Kamloops	10 116	3 050	13 167	13,175	3,270	16,445
Nelson	6 472	804	7 276	8,345	968	9,313
Prince George	27 114	5 817	32 932	33,428	8,280	41,708
Prince Rupert	17 297	2 312	19 609	19,622	2,493	22,115
Vancouver	17 330	2 205	19 535	14,624	2,208	16,832
TOTAL	**84 387**	**15 647**	**100 035**	**97,049**	**18,909**	**115,958**

Table C-6: Trees Planted on Crown Land in 1984-85, by Forest Region and Species

Species	Cariboo	Kamloops	Nelson	Prince George	Prince Rupert	Vancouver	TOTAL
				(thousands of trees)			
Cedar, Western Red	21	59	259	—	249	1,656	2,244
Cypress	—	—	—	—	19	168	186
Douglas-fir	2,290	3,015	1,881	1,305	40	7,309	15,840
Fir, Amabilis	—	—	—	—	—	2,635	2,635
Fir, Grand	—	—	—	—	—	503	503
Hemlock, Mountain	—	—	—	—	25	65	90
Hemlock, Western	—	—	—	—	348	1,655	2,003
Larch, Western	5	544	272	—	25	—	845
Pine, Lodgepole	1,478	6,857	1,445	4,205	11,142	162	25,289
Pine, Ponderosa	—	118	—	—	—	—	118
Pine, Western White	—	—	9	—	—	—	9
Spruce, Engelmann and White	5,752	5,851	5,447	36,198	9,140	1,664	64,052
Spruce, Sitka	—	—	—	—	1,128	1,015	2,144
TOTAL	**9,545**	**16,445**	**9,313**	**41,708**	**22,115**	**16,832**	**115,958**

Table C-7: Area Planted in 1984-85, by Forest Region

	Crown Land				Private Land				
		TSA[2]		Sub-				Sub-	
Forest Region	TFL[1]	Licensee[3]	Ministry[4]	total	TFL[5]	TF[6]	Other[7]	total	TOTAL
					(hectares)				
Cariboo	372	4 011	3 134	7 517	—	—	—	—	7 517
Kamloops	1 113	7 938	4 115	13 167	—	—	—	—	13 167
Nelson	1 492	4 257	1 527	7 276	—	641	68	709	7 985
Prince George	1 986	23 527	7 419	32 932	—	—	—	—	32 932
Prince Rupert	2 550	13 764	3 295	19 609	—	—	—	—	19 609
Vancouver	8 954	8 155	2 426	19 535	1 221	3 576	1	4 798	24 333
TOTAL	**16 467**	**61 652**	**21 916**	**100 035**	**1 221**	**4 217**	**69**	**5 507**	**105 542**

Notes:

[1] Includes Crown land within tree farm licences. Planting is funded by the ministry, through credits against stumpage payable. Planting is the responsibility of the licensee.

[2] Includes Crown land within timber supply areas, excluding tree farm licences, woodlot licences, farm leases, federal lands and Indian Reserves.

[3] Planting is funded by the ministry, through credits against stumpage payable. Planting is the responsibility of the licensee.

[4] Planting is funded by the ministry. Planting is the responsibility of the ministry.

[5] Includes private land within tree farm licences.

[6] Includes private land within certified tree farms, but outside tree farm licences.

[7] Includes private land outside tree farm licences and certified tree farms.

Table C-8: Trees Planted in 1984-85, by Forest Region

Forest Region	Crown Land				Private Land				
		TSA[2]							
	TFL[1]	Licensee[3]	Ministry[4]	Sub-total	TFL[5]	TF[6]	Other[7]	Sub-total	TOTAL
	(thousands of trees)								
Cariboo	501	5,173	3,870	9,544	—	—	—	—	9,544
Kamloops	1,426	10,062	4,957	16,445	—	—	—	—	16,445
Nelson	1,843	5,642	1,828	9,313	—	616	49	665	9,978
Prince George	2,412	28,688	10,609	41,708	—	—	—	—	41,708
Prince Rupert	2,202	16,261	3,652	22,115	—	—	—	—	22,115
Vancouver	7,338	7,186	2,308	16,832	1,109	3,981	1	5,091	21,923
TOTAL	**15,722**	**73,012**	**27,224**	**115,958**	**1,109**	**4,597**	**50**	**5,756**	**121,714**

Notes:

[1] Includes Crown land within tree farm licences. Planting is funded by the ministry, through credits against stumpage payable. Planting is the responsibility of the licensee.

[2] Includes Crown land within timber supply areas, excluding tree farm licences, woodlot licences, farm leases, federal lands and Indian Reserves.

[3] Planting is funded by the ministry, through credits against stumpage payable. Planting is the responsibility of the licensee.

[4] Planting is funded by the ministry. Planting is the responsibility of the ministry.

[5] Includes private land within tree farm licences.

[6] Includes private land within certified tree farms, but outside tree farm licences.

[7] Includes private land outside tree farm licences and certified tree farms.

Table C-9: Brushing and Weeding on Crown Land in 1984-85, by Forest Region

Forest Region	Treatment		
	Manual	Chemical	TOTAL
	(hectares)		
Cariboo	5	—	5
Kamloops	504	10	514
Nelson	410	218	628
Prince George	459	217	676
Prince Rupert	992	1 312	2 304
Vancouver	3 479	8 904	12 383
TOTAL	**5 849**	**10 661**	**16 510**

Table C-10: Crown Land Improved in 1984-85, by Forest Region

Forest Region	Spacing[1]	Fertilization	Site Rehabilitation	Conifer Release	Commercial Thinning	Other[2]
			(hectares)			
Cariboo	767	—	121	—	—	251
Kamloops	1 730	—	2 310	—	—	1 738
Nelson	580	—	1 424	—	—	—
Prince George	240	—	8 601	—	—	2 024
Prince Rupert	34	—	943	—	30	200
Vancouver	2 264	—	1 094	181	56	393
TOTAL	**5 615**	**—**	**14 493**	**181**	**86**	**4 606**

Notes:
[1] Includes juvenile spacing and sanitation spacing.
[2] Includes mistletoe control, seed tree control, and falling of snags and residual trees.

Table C-11: Average Cost[1] of Silviculture Treatments on Crown Land in 1984-85, by Forest Region

Treatment	Cariboo	Kamloops	Nelson	Prince George	Prince Rupert	Vancouver	British Columbia
				(dollars per hectare)			
Basic Silviculture							
Surveys[2]	6	6	11	6	8	9	8
Site Preparation for Natural Restocking	125	207	79	134	95	121	131
Site Preparation for Planting	148	280	183	149	162	151	172
Planting[3]	311	289	356	275	268	327	297
Brushing and Weeding:							
Manual	764	388	330	244	516	368	383
Chemical[4]	—	93	638	597	486	338	367
Intensive Silviculture							
Surveys[2]	7	5	8	5	6	8	6
Backlog Planting[3]	171	252	237	278	226	306	257
Spacing[5]	344	557	114	399	1,110	597	498
Fertilization	—	—	—	—	—	—	—
Site Rehabilitation	501	340	279	217	391	535	280
Conifer Release	—	—	—	—	—	307	307
Commercial Thinning	—	—	—	—	—	71	71
Other[6]	47	48	—	35	33	43	41

Notes:
[1] Based on on-site operating cost (equipment, transportation and wages for crew and crew boss). Does not include overhead cost (initial field inspection, planning and prescription, site delineation, general supervision of project and final inspection to check quality). Weighted by the area treated, where applicable.
[2] Includes surveys for assessing site treatment, plantation survival and stocking.
[3] Excludes cost of seedlings.
[4] Includes cost of herbicides.
[5] Includes juvenile spacing and sanitation spacing.
[6] Includes mistletoe control, seed tree control, and falling of snags and residual trees.

Table C-12: Seed Additions, Withdrawals and Inventory in 1984-85, by Species[1]

Native Species	Initial Inventory[2]	Additions		Withdrawals			Final Inventory[5]
		Natural Collections	Seed Orchard Collections	Ministry Nurseries[3]	Private & Licensee Nurseries[3]	Other[4]	
	(kilograms)						
Cedar, Western Red	512	—	—	24	7	11	470
Cypress	12	—	—	—	5	—	7
Douglas-fir	11 655	69	13	401	326	52	10 957
Fir, Alpine	815	—	—	—	—	1	815
Fir, Amabilis	5 351	—	—	645	94	11	4 601
Fir, Grand	900	—	—	18	11	3	868
Hemlock, Mountain	146	—	—	—	—	—	145
Hemlock, Western	849	—	—	7	21	6	815
Larch, Western	261	5	—	7	2	2	255
Pine, Lodgepole	3 838	273	—	201	99	199	3 613
Pine, Ponderosa	625	15	—	16	26	15	583
Spruce, Engelmann	5 654	23	—	92	85	5	5 495
Spruce, Sitka	782	—	—	17	1	—	764
Spruce, White	4 621	848	—	88	81	3	5 298
Spruce Hybrids[6]	8 003	82	—	110	130	13	7 832
Miscellanea	136	—	—	20	—	1	116
TOTAL	**44 158**	**1 315**	**13**	**1 646**	**889**	**320**	**42 632**

Notes:

[1] Excludes approximately 140 kilograms of seed from exotic species.

[2] April 1, 1984. Also reflects taxonomic reclassification of several spruce seedlots during 1984-85.

[3] For sowing of seedlings primarily in 1985-86.

[4] For direct seeding, export, etc.

[5] March 31, 1985.

[6] Includes natural crosses between Sitka, Engelmann, white and black spruce.

Table D-1: Forest Protection Program Expenditure[1] in 1984-85, by Forest Region

Forest Region	Administration	Fire Management	Pest Management	Air Operations	Planning Development & Research	Emergency Bark Beetle Program[2]	TOTAL
	(thousands of dollars)						
Cariboo	453	608	513	94	14	1,621	3,303
Kamloops	1,626	378	317	127	32	704	3,184
Nelson	798	742	437	113	18	766	2,874
Prince George	1,042	777	335	206	—	356	2,716
Prince Rupert	777	704	1,150	110	19	1,145	3,905
Vancouver	673	630	381	99	1	14	1,798
Victoria	413	275	351	54	258	22	1,373
TOTAL	**5,782**	**4,114**	**3,484**	**803**	**342**	**4,628**	**19,153**

Notes:
[1] Excludes $1.840 million in employee benefits. Expenditure for employee benefits was also excluded in previous annual reports.
[2] Separately funded.

Table D-2: Number and Causes of Wildfires[1] in 1984-85, by Forest Region

	Cariboo		Kamloops		Nelson		Prince George		Prince Rupert		Vancouver		TOTAL	
Cause	1984–1985	Ten-Year Aver.[2]	1984–1985	Ten-Year Aver.	1984–1985	Ten-Year Aver.	1984–1985	Ten-Year Aver.	1984–1985	Ten-Year Aver.	1984–1985	Ten-Year Aver.	1984–1985	Ten-Year Aver.
	(number of wildfires)													
Lightning	234	100	617	265	479	240	449	208	76	69	107	97	1,962	978
Recreational[3]	14	17	57	61	29	35	16	27	18	25	45	47	179	212
Railroads	1	5	20	35	12	19	4	10	4	3	9	14	50	86
Smokers	22	26	54	83	30	42	7	20	9	20	33	65	155	256
Brush Burning[4]	23	16	14	19	10	15	23	29	14	14	22	13	106	105
Range Burning	11	20	5	6	1	1	7	14	—	1	1	1	25	43
Construction[5]	2	3	2	4	—	4	1	4	6	3	1	6	12	23
Industrial[6]	25	21	20	42	39	28	19	27	21	21	36	35	160	174
Incendiary	57	75	24	26	18	7	38	21	10	8	4	7	151	144
Miscellaneous Known Causes	59	37	92	77	44	44	14	19	33	27	19	27	261	230
Unknown Causes	—	1	—	1	—	1	1	1	1	—	—	2	2	6
TOTAL	**448**	**319**	**905**	**618**	**662**	**435**	**579**	**380**	**192**	**191**	**277**	**313**	**3,063**	**2,256**

Notes:
[1] Includes all wildfires in British Columbia.
[2] Based on 1974 through 1983.
[3] Campers, hunters, fishermen, etc.
[4] Excludes railway and right-of-way clearing.
[5] Road, power, telephone, pipeline and right-of-way construction.
[6] Logging, milling and other industries.

Table D-3: Area Burned by Wildfires[1] in 1984-85, by Forest Region

Forest Region	Mature Timber		Immature Timber		Other Cover[2]		TOTAL	
	1984–1985	Ten-Year Average[3]	1984–1985	Ten-Year Average	1984–1985	Ten-Year Average	1984–1985	Ten-Year Average
	(hectares)							
Cariboo	322	1 013	132	470	622	766	1 076	2 249
Kamloops	2 331	795	279	271	990	951	3 600	2 017
Nelson	617	506	15	154	445	612	1 077	1 272
Prince George	6 751	12 542	794	7 333	5 168	20 393	12 713	40 268
Prince Rupert	405	16 280	—	9 533	175	4 634	580	30 447
Vancouver	201	447	376	215	282	487	859	1 149
TOTAL	**10 629**	**31 584**	**1 598**	**17 977**	**7 681**	**27 843**	**19 908**	**77 402**

Notes:
[1] Includes all wildfires in British Columbia.
[2] Includes wildfires on Not Satisfactorily Restocked (NSR) forest land, Non-Commercial (NC) forest land, grazing land, and non-productive sites. Also includes wildfires less than 4 hectares in area.
[3] Base on 1974 through 1983.

Table D-4: Timber Burned by Wildfires[1] in 1984-85, by Forest Region

Forest Region	Mature Timber[2]	Immature Timber[3]	TOTAL
	(thousands of cubic metres)		
Cariboo	14	7	20
Kamloops	764	15	780
Nelson	139	1	140
Prince George	1 223	45	1 267
Prince Rupert	73	—	73
Vancouver	127	63	191
TOTAL	**2 340**	**131**	**2 471**

Notes:
[1] Includes all wildfires in British Columbia.
[2] Before salvage. Burned timber is salvaged wherever practical.
[3] Estimates. Based on species and generalized information on age and site. Assumes complete mortality.

Table D-5: Area under Attack by Forest Pests[1] in 1984-85, by Forest Region

Forest Region	Bark Beetles[2]	Defoliators	TOTAL[3]
		(hectares)	
Cariboo	383 200	24 250	407 450
Kamloops	58 700	51 160	109 860
Nelson	24 700	63 400	88 100
Prince George	28 920	8 800	37 720
Prince Rupert	28 100	2 700	30 800
Vancouver	5 000	—	5 000
TOTAL	**528 620**	**150 310**	**678 930**

Notes:
[1] Best available estimates. Accuracy varies, depending on the pest.
[2] Area of forests attacked by bark beetles is estimated from aerial surveys in 1984. Represents areas with trees attacked in 1983.
[3] Many more pests are endemic throughout most forests. Estimates of area under attack are meaningless for these pests without detailed measures of the intensity of infestation.

Table D-6: Timber Damaged by Forest Pests[1] in 1984-85, by Forest Region

Forest Region	Bark Beetles	Defoliators	Dwarf Mistletoes	Root Diseases	TOTAL[2]
			(thousands of cubic metres)		
Cariboo	7 622	98	680	110	8 510
Kamloops	2 735	510	325	990	4 560
Nelson	776	24	273	585	1 658
Prince George	621	2	400	240	1 263
Prince Rupert	2 219	1	1 200	205	3 625
Vancouver	198	—	460	1 310	1 968
TOTAL	**14 171**	**635**	**3 338**	**3 440**	**21 584**

Notes:
[1] Best available estimates. Accuracy varies, depending on the pest. Only the major forest pests of British Columbia are included. Volumes are estimated before salvage. Damaged timber is salvaged wherever practical.
[2] Volume lost to decay in forests exceeding 100 years of age is not included. This is estimated at 10 million m^3 per year. Nursery and regeneration losses and growth losses due to other insects, diseases and unwanted vegetation are also not included.

Table D-7: Fire Suppression Program Expenditure in 1984-85, by Forest Region

Forest Region	Direct Fire Fighting	Suppression Flying	Equipment	Standby and Overtime	Suppression & Safety Training	Site Rehabilitation	TOTAL
			(thousands of dollars)				
Cariboo	1,235	988	2	371	6	2	2,604
Kamloops	2,794	1,513	1	723	2	14	5,047
Nelson	2,748	2,217	1	712	—	—	5,678
Prince George	5,620	3,938	2	646	1	1	10,208
Prince Rupert	991	766	—	217	1	66	2,041
Vancouver	642	725	7	376	—	—	1,750
Victoria	869	8,061	1,087	193	52	3	10,265
TOTAL	**14,899**	**18,208**	**1,100**	**3,238**	**62**	**86**	**37,593**

Table E-1: Range Management Program Expenditure[1] in 1984-85, by Range District

Range District	Planning & Administration	Improvements: Repair & Maintenance	Improvements: Development	Inventory & Research	TOTAL
		(thousands of dollars)			
Cariboo	669	33	160	31	893
Kamloops	707	31	66	35	839
Nelson	637	7	51	5	710
Prince George	508	—	40	—	548
Prince Rupert	209	—	—	—	209
Vancouver	3	—	—	—	3
Victoria	466	—	—	328	794
TOTAL	**3,199**	**71**	**327**	**399**	**3,996**

Note:

[1] Excludes expenditure funded by the Agriculture and Rural Development Subsidiary Agreement (ARDSA) and wholly by non-ministry sources. Excludes $0.480 million in employee benefits. Expenditure for employee benefits was also excluded in previous annual reports.

Table E-2: Range Revenue in 1984-85, by Range District

Range District	Annual Rents and Fees
	(thousands of dollars)
Cariboo	443
Kamloops	401
Nelson	100
Prince George	168
Prince Rupert	39
Vancouver	2
Victoria	—
TOTAL	**1,153**

Table E-3: Grazing Permits and Grazing Licences in 1984-85, by Range District

Range District	Permits			Licences		
	Number	Authorized	Utilized	Number	Authorized	Utilized
		(AUMs)[1]			(AUMs)	
Cariboo	564	311,633	284,542	92	74,662	73,817
Kamloops	398	201,769	184,673	115	144,155	140,561
Nelson	231	72,148	69,246	25	9,311	9,167
Prince George	410	116,746	111,282	53	25,991	25,776
Prince Rupert	178	31,123	23,306	13	7,748	6,817
Vancouver	23	1,947	1,411	2	416	362
TOTAL	**1,804**	**735,366**	**674,460**	**300**	**262,283**	**256,500**

Note:

[1] Animal Unit Month (AUM) means the amount of forage required for one month by an average animal of the genus bos, aged 6 months or older.

Table E-4: Hay Cutting Permits and Hay Cutting Licences in 1984-85, by Range District

Range District	Permits			Licences		
	Number	Authorized	Utilized	Number	Authorized	Utilized
		(tonnes)			(tonnes)	
Cariboo	37	712	518	68	1 333	1 018
Kamloops	—	—	—	3	106	106
Nelson	—	—	—	2	35	35
Prince George	11	301	231	1	8	8
Prince Rupert	4	36	20	2	37	37
Vancouver	1	5	5	—	—	—
TOTAL	**53**	**1 054**	**774**	**76**	**1 519**	**1 204**

Table E-5: Range Improvements[1] on Crown Land in 1984-85, by Range District

Range District	Seeding		Fencing[3]	Weed Control[4]	Water Development[5]	Other[6]
	Grassland Rehabilitation	Disturbed Forest Land[2]				
	(ha)		(km)	(ha)	(no.)	(no.)
Cariboo	17	1 501	81	112	14	70
Kamloops	275	7 562	58	219	39	45
Nelson	—	2 075	63	131	56	36
Prince George	1 417	620	259	39	—	52
Prince Rupert	—	163	7	—	—	14
Vancouver	—	—	4	—	—	1
TOTAL	**1 709**	**11 921**	**471**	**501**	**109**	**218**

Notes:

[1] Excludes improvements funded by ARDSA and wholly by non-ministry sources.

[2] Includes seeding of clearcuts.

[3] Includes repair, maintenance and construction of fences.

[4] Control of knapweed (449 ha), thistle (51 ha) and other species (1 ha).

[5] Includes repair, maintenance and development of water sources.

[6] Includes repair, maintenance and development of trails, corrals, cattleguards, etc.

Table E-6: Average Cost[1] of Range Improvements[2] on Crown Land in 1984-85, by Range District

Range District	Seeding[3]	Fencing[4]	Weed Control[5]
	($/ha)	($/km)	($/ha)
Cariboo	43	2,323	289
Kamloops	14	1,722	456
Nelson	17	1,193	294
Prince George	45	2,398	203
Prince Rupert	23	1,994	—
Vancouver	—	1,036	—
British Columbia	23	1,868	357

Notes:
[1] Based on funds from the Range Management Program, other ministry programs and private sources (on cost sharing projects).
[2] Excludes improvements funded by ARDSA and wholly by non-ministry sources.
[3] Combines grassland rehabilitation (1 709 ha) and seeding of disturbed forest land (11 921 ha), mainly clearcuts.
[4] Construction of new fences.

Table F-1: Recreation Management Program Expenditure[1] in 1984-85, by Forest Region

Forest Region	Resource Management[2]	Site and Trail		TOTAL
		Maintenance	Development	
	(thousands of dollars)			
Cariboo	293	190	—	483
Kamloops	501	165	1	667
Nelson	442	207	—	649
Prince George	358	103	—	461
Prince Rupert	320	79	—	399
Vancouver	359	177	—	536
Victoria	295	—	—	295
TOTAL	**2,568**	**921**	**1**	**3,490**

Notes:
[1] Excludes assistance from volunteer groups and federal-provincial employment programs. Excludes $0.457 million in employee benefits. Expenditure for employee benefits was also excluded in previous annual reports.
[2] Includes administration.

Table F-2: Recreation Site and Trail Use in 1984-85, by Forest Region

Forest Region	Sites		Trails	
	Maintained	User Visits[1]	Length Maintained	User Visits[2]
	(number)	(number)	(km)	(number)
Cariboo	129	236,000	240	6,000
Kamloops	310	308,000	477	115,000
Nelson	218	205,000	152	54,000
Prince George	148	120,000	74	74,000
Prince Rupert	77	92,000	86	6,000
Vancouver	138	330,000	153	40,000
TOTAL	**1,020**	**1,291,000**	**1 182**	**295,000**

Notes:
[1] Estimates. Based on field surveys.
[2] Estimates.

V. The Structure of the Ministry

The ministry established its present structure in order to decentralize administrative authority. The headquarters, region and district staffs work together to decentralize decision-making. The ministry headquarters staff define policy and provide overall guidance. They also advise the deputy minister and, through him, the minister and government on all matters relating to forest and range policy.

Headquarters Organization

The headquarters staff was reorganized during 1984-85. The previous four divisions and 17 branches were reorganized into three divisions and 15 branches. The three divisions are:

— Finance and Administration,
— Forestry, and
— Operations.

As shown in the organization chart on page 55, each of the three divisions is headed by an assistant deputy minister who reports to the deputy minister. These three officials, together with the deputy minister as chairman, constitute the ministry's executive. In addition to the three assistant deputy ministers, the directors of Information Services Branch, Range Management Branch and Strategic Studies Branch report directly to the deputy minister.

The functions of each division are summarized below.

The *Finance and Administration Division* is responsible for advising the executive in all administrative matters and for developing policies and procedures pertaining to the ministry's general administration. The division is comprised of the following five branches:

— Financial Services,
— Personnel Services,
— Systems Services,
— Technical and Administrative Services, and
— Valuation.

The *Forestry Division* ensures that all Crown forest lands are managed to provide the greatest long-term benefits for British Columbia. The assistant deputy minister of this division is also the chief forester. The Forestry Division maintains a comprehensive inventory of all the province's forest and range resources. Present and potential uses of forest resources are assessed in this division, which is comprised of the following five branches:

— Planning and Inventory,
— Protection,
— Recreation Management,
— Research, and
— Silviculture.

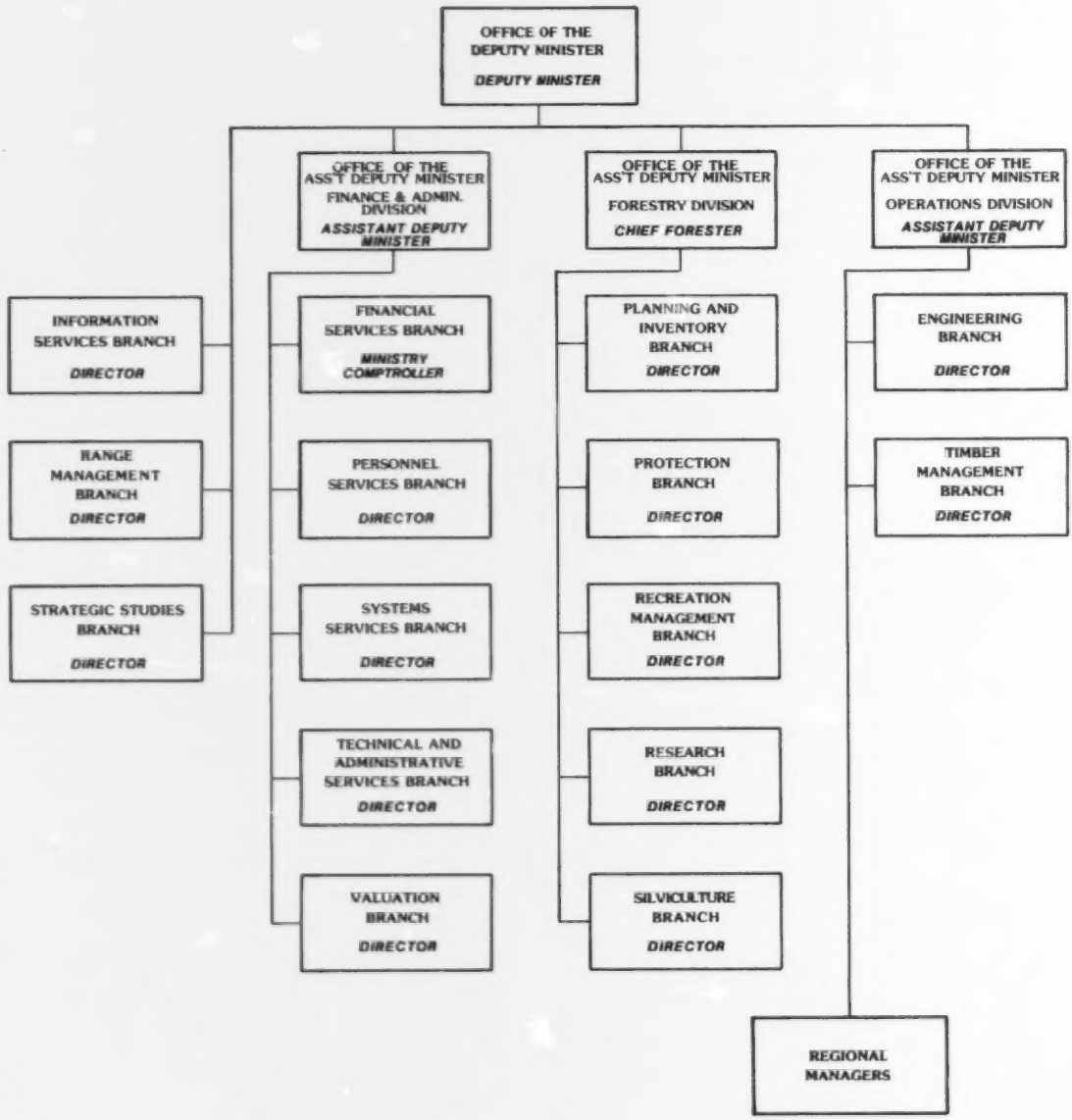
The *Operations Division* is responsible for providing access to timber, administrating timber harvests, and ensuring that the ministry's policies, programs and procedures are promptly and effectively implemented in the province's six forest regions and 46 forest districts. Two branches are included in this division:

— Engineering, and
— Timber Management.

The assistant deputy minister of operations is responsible for administering and coordinating all field operations in the six forest regions:

— Cariboo,
— Kamloops,
— Nelson,
— Prince George,
— Prince Rupert, and
— Vancouver.

Headquarters Organization

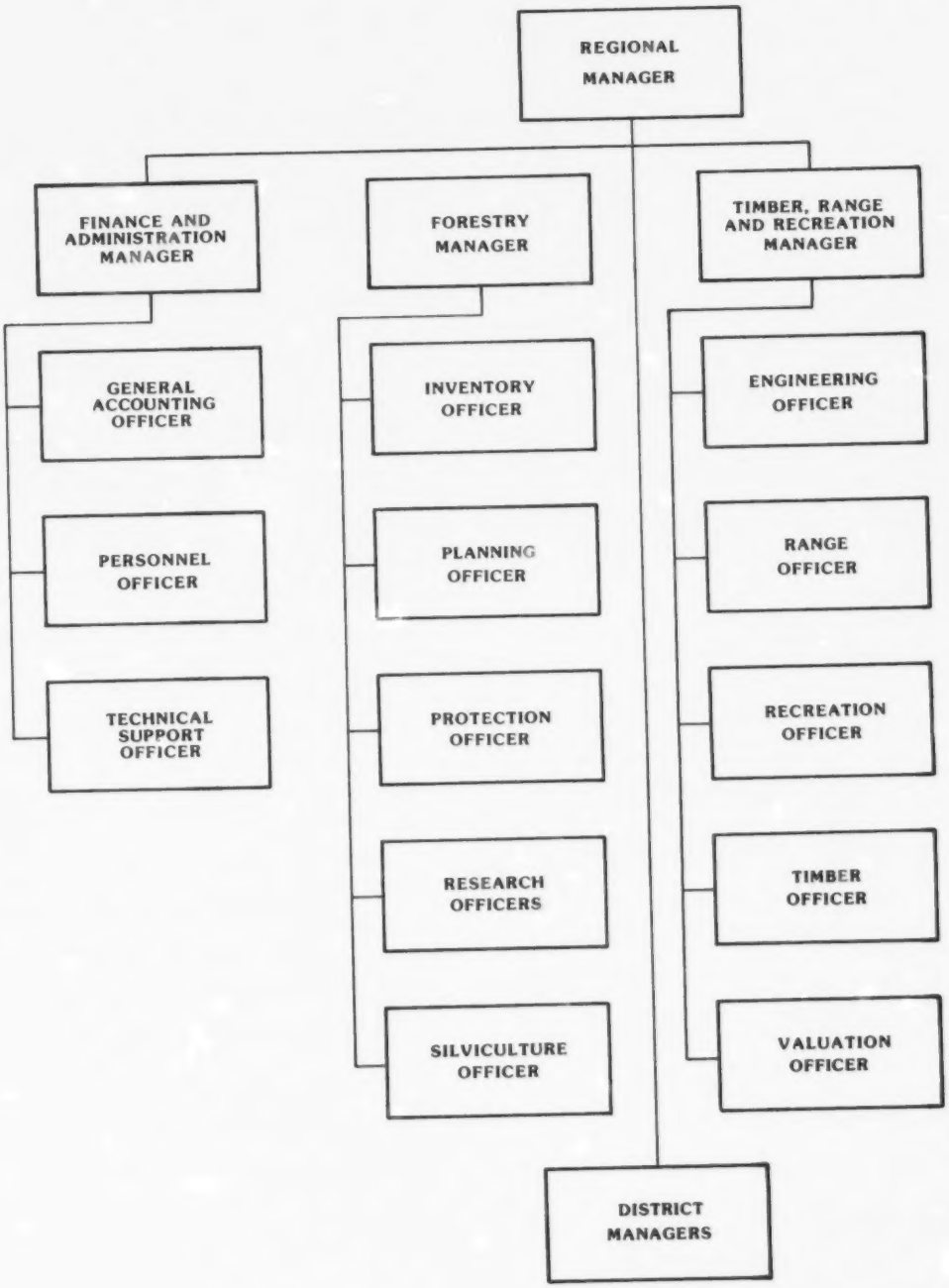


Forest Region Organization

The province is divided into six administrative units or forest regions. Each is administered from its own regional office by a regional manager. Each forest region is further subdivided into forest districts which are under the direction of district managers. The organization of the regional offices is shown on page 57. Three regional staff managers provide advice and services to the regional manager and to the various district managers and field personnel. Regional office personnel are responsible for servicing, coordinating and monitoring the activities of all field personnel operating out of district offices throughout each region.

The staff of each regional office develops regional programs and plans, and ensures that all policies, programs and procedures originating from ministry headquarters are administered consistently and effectively throughout the region.

Forest Region Organization



VI. Directory

(March 31, 1985)

Victoria

Minister
HON. T.M. WATERLAND

Executive Committee
A.C. MacPHERSON,
Deputy Minister and Chairman, Executive Committee
R.J. CULLEN,
Assistant Deputy Minister, Finance and Administration Division
R.W. ROBBINS,
Chief Forester and Assistant Deputy Minister, Forestry Division
W.C. CHESTON,
Assistant Deputy Minister, Operations Division

Executive Director
J.A.K. REID,
Legislation and Policy

Branch Directors
D.S. CAMERON*,
Director, Engineering Branch
R.K. NATSUHARA,
Director, Financial Services Branch
J.R. COX,
Director, Information Services Branch
L.W. GEDDES,
Director, Personnel Services Branch
F. HEGYI,
Director, Planning and Inventory Branch
H.G. DOERKSEN,
Director, Protection Branch
W.N. McLACHLAN,
Director, Range Management Branch
H.N. MARSHALL,
Director, Recreation Management Branch
J.A. DANGERFIELD,
Director, Research Branch
C.M. JOHNSON,
Director, Silviculture Branch
J.A. BIICKERT,
Director, Strategic Studies Branch
J.G. HILL,
Director, Systems Services Branch
L.G. UNDERWOOD,
Director, Technical & Administrative Services Branch
J.J. JUHASZ,
Director, Timber Management Branch
H. WAELTI,
Director, Valuation Branch

Forest Regions and Districts

Cariboo Forest Region

Regional Manager
J. SZAUER,
Williams Lake

District Managers
R.J. REEVES,
Chilcotin Forest District, Alexis Creek
J. MENNING,
Horsefly Forest District, Horsefly
R.T. OSTBY,
100 Mile House Forest District, 100 Mile House
W.V. BOUDREAU*,
Quesnel Forest District, Quesnel
W.S. CARR,
Williams Lake Forest District, Williams Lake

Kamloops Forest Region

Regional Manager
A.B. ROBINSON,
Kamloops

District Managers
M.E. MONTEITH,
Clearwater Forest District, Clearwater
R.G. MILLER,
Kamloops Forest District, Kamloops
M.T. LINDBERG*,
Lillooet Forest District, Lillooet
K.A. COLLINGWOOD,
Merritt Forest District, Merritt
J.H. WENGER,
Penticton Forest District, Penticton

* Acting Capacity

J.H. LITTLE,
Salmon Arm Forest District, Salmon Arm
E.W. HEWITT,
Vernon Forest District, Vernon

Nelson Forest Region

Regional Manager

J.R.D. CUTHBERT,
Nelson

District Managers

K.E. ARNETT,
Arrow Forest District, Castlegar
G.H. NICHOLS,
Boundary Forest District, Grand Forks
R.R. TOZER,
Cranbrook Forest District, Cranbrook
D.E. GILL,
Golden Forest District, Golden
L.P. ATHERTON,
Invermere Forest District, Invermere
J.P. SEDLACK,
Kootenay Lake Forest District, Nelson
T. HARVIE,
Revelstoke Forest District, Revelstoke

Prince George Forest Region

Regional Manager

M.J. WILKINS,
Prince George

District Managers

T.R. GIBBS,
Dawson Creek Forest District, Dawson Creek
A.C. JOYCE,
Fort Nelson Forest District, Fort Nelson
W.E. HALL,
Fort St. James Forest District, Fort St. James
VACANT,
Fort St. John Forest District, Fort St. John
C.L. NELSON,
Mackenzie Forest District, Mackenzie
R.M. HAWKINS,
McBride Forest District, McBride
R.G. TRENAMAN,
Prince George East Forest District, Prince George
K.W. MAGEE,
Prince George West Forest District, Prince George
R.G. CLARK,
Vanderhoof Forest District, Vanderhoof

Prince Rupert Forest Region

Regional Manager

K.J. INGRAM,
Smithers

District Managers

K.E.G. PRATT*,
Bulkley Forest District, Smithers
G.I. BOWIE,
Cassiar Forest District, Dease Lake
G.F. DODD,
Kalum Forest District, Terrace
R.N. MOULD*,
Kispiox Forest District, Hazelton
A.R. PEMENT,
Lakes Forest District, Burns Lake
D.A. AMONSON,
Morice Forest District, Houston
J.G. WARD,
North Coast Forest District, Prince Rupert
T.A. DYER,
Queen Charlotte Islands Forest District, Queen Charlotte City

Vancouver Forest Region

Regional Manager

D.T. GRANT,
Vancouver

District Managers

D.E. deHART,
Campbell River Forest District, Campbell River
J.H. CARRADICE,
Chilliwack Forest District, Chilliwack
T.A. WALKER,
Duncan Forest District, Duncan
D.B. DOERKSEN,
Maple Ridge Forest District, Maple Ridge
R.W. THOMAS,
Mid-Coast Forest District, Bella Coola
R.A. CAMPBELL,
Port Alberni Forest District, Port Alberni
W.S. MILLWARD,
Port McNeill Forest District, Port McNeill
J.B. MOUNTAIN,
Powell River Forest District, Powell River
B.L. CUSTANCE,
Sechelt Forest District, Sechelt
N.P. GILGAN,
Squamish Forest District, Squamish

* Acting Capacity